35% PROGRESS: HeartCode ACLS 2025

~4h 11m left

Ahmed Othman A

Coach

Learn more here:

EMS Transport and Aler...

What is an advantage of EMS alerting the receiving facility of the impending arrival of a patient with suspected acute ischemic stroke?

You got it!

Your Answer | The hospital can perform more efficient evaluation and management.

I Know It

CHALLENGE US

NEXT

Self-Assessment

Adjust your competence estimate to the right to focus on the questions

ADVANCED BEGINNER

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Autoplay On

ACUTE CORONARY SYNDROMES INTRODUCTION

Goals for ACS Patients

The primary goals for ACS patients are

- **Prevention of major adverse cardiovascular events** such as death, nonfatal myocardial infarction (MI), and the need for urgent post-infarction revascularization.
- **Identification of patients with STEMI** and **triage for early reperfusion therapy**.
- **Relief of ischemic chest discomfort**.
- **Treatment of acute, life-threatening complications of ACS**, such as ventricular fibrillation (VF) or pulseless ventricular tachycardia (pVT), unstable bradycardias, ventricular wall rupture, papillary muscle rupture, decompensated shock, and other unstable tachycardias.

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ACUTE CORONARY SYNDROMES INTRODUCTION

OHCA Response

Half of ACS deaths occur before the patient reaches the hospital, with **VF or pVT as the precipitating rhythm in the majority of cases**.

VF is most likely to develop during the first 4 hours after onset of symptoms, so communities should develop programs to respond quickly to ACS.

Such programs should focus on

- Recognizing symptoms of ACS.
- Activating the emergency medical services (EMS) system, with EMS providing prehospital notification in advance.
- Providing early CPR if cardiac arrest occurs.
- Providing early defibrillation with AEDs available through public-access defibrillation programs and first responders.
- Providing a coordinated system of care among the EMS system, the emergency department (ED), and cardiac specialists.

Self-Assessment

Adjust your competence estimate to the right to focus on the questions

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ACUTE CORONARY SYNDROMES INTRODUCTION

STEMI Chain of Survival

The STEMI Chain of Survival is similar to the Chain of Survival for sudden cardiac arrest. Its links indicate the actions that patients, family members, and healthcare providers can rapidly take to maximize STEMI recovery:

- Recognition and reaction to STEMI warning signs.
- EMS dispatch and rapid EMS system transport and prearrival notification to the receiving hospital.
- Assessment and diagnosis in the ED (or cath lab).
- Treatment.

Self-Assessment

Adjust your competence estimate to the right to focus on the questions

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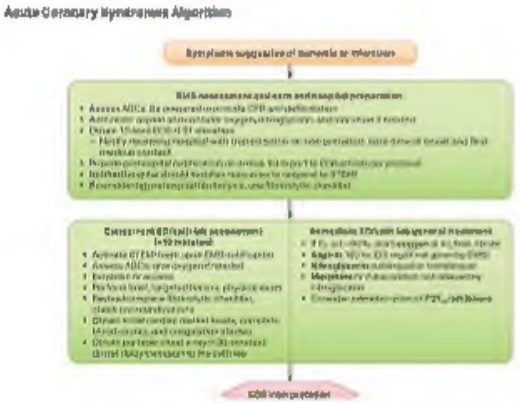
ACUTE CORONARY SYNDROMES INTRODUCTION

ACS Algorithm

The Acute Coronary Syndromes (ACS) Algorithm will help guide your clinical strategy when patients have signs and symptoms of ACS, including possible acute myocardial infarction.



PREVIOUS 1 2 3 4

I KNEW | GOT IT NOW | THINK I GOT IT | I DON'T GET IT

CHALLENGE US

Self-Assessment

Adjust your competence estimate to the right to focus on the questions

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SIGNS AND SYMPTOMS OF ACS

The most common symptom of myocardial ischemia and infarction is retrosternal chest discomfort. The patient may perceive this discomfort more as **pressure** or **tightness** than as actual pain.

Chest discomfort is the major symptom in most patients (both men and women) with ACS, but patients frequently deny or misinterpret this and other symptoms. **The elderly, women, diabetic patients, and hypertensive patients are most likely to delay**, in part because they are more likely to have **atypical symptoms** or **presentations**.

Keep in mind that **older adults and women may present without chest pain**.

Symptoms that suggest ACS may also include

- Uncomfortable pressure, fullness, squeezing, or pain in the center of the chest lasting several minutes (usually more than a few minutes)
- Chest discomfort spreading to the shoulders, neck, one or both arms, or jaw
- Chest discomfort spreading into the back or between the shoulder blades
- Light-headedness, dizziness, fainting, syncope, sweating, nausea, or vomiting

I KNEW | GOT IT NOW | THINK I GOT IT | I DON'T GET IT

CHALLENGE US

Self-Assessment

Adjust your competence estimate to the right to focus on the questions

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SIGNS AND SYMPTOMS OF ACS

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- Chest discomfort spreading to the shoulders, neck, one or both arms, or jaw
- Chest discomfort spreading into the back or between the shoulder blades
- Light-headedness, dizziness, fainting, syncope, sweating, nausea, or vomiting
- Unexplained sudden shortness of breath, which may occur with or without chest discomfort
- Less commonly, the discomfort occurs in the epigastrium and is described as indigestion

These symptoms may also suggest other life-threatening conditions, including aortic dissection, acute pulmonary embolism, acute pericardial effusion with tamponade, and tension pneumothorax.

Self-Assessment

Adjust your competence estimate to the right to focus on the questions

ADVANCED BEGINNER

I KNEW | GOT IT NOW | THINK I GOT IT | I DON'T GET IT

CHALLENGE US

Coach

Learn more here:

Signs and Symptoms of ...

What is the most common symptom of myocardial ischemia and infarction?

You got it!

Your Answer | Retrosternal chest pain

I Know It

CHALLENGE US

NEXT

Self-Assessment

Adjust your competence estimate to the right to focus on the questions

ADVANCED BEGINNER

Coach

Learn more here:

Signs and Symptoms of ...

Which **demographic** group experiencing **acute coronary syndromes** is more likely to present **without chest pain**?

You got it!

Your Answer

Females
Older adults may also present without chest pain.

I Know It

CHALLENGE US

NEXT

Self-Assessment

Adjust your competence estimate to the right to focus on the questions

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EMS ASSESSMENT, CARE, AND HOSPITAL PREPARATION

Step 2 in the algorithm outlines EMS assessment, care, and hospital preparation. EMS responders may perform the following assessments and actions as they stabilize, triage, and transport the patient to an appropriate facility.

- **Assess ABC** (airway, breathing, circulation). Be prepared to provide CPR and defibrillation.
- **Administer aspirin** and **consider oxygen**, **nitroglycerin**, and **morphine** if needed.
- **Obtain a 12-lead ECG.** If there is ST elevation, notify the receiving hospital with a transmission or interpertation; note the time of onset and first medical contact.
- **Provide prehospital notification**; on arrival, transport to ED/cath lab per protocol.
- The notified hospital should mobilize resources to respond to STEMI.
- If considering prehospital fibrinolysis, **use a fibrinolytic checklist.**
- If out-of-hospital providers cannot complete these initial steps before the patient arrives at the hospital, the ED provider should do so.

Obtaining a 12-Lead ECG

Self-Assessment

Adjust your competence estimate to the right to focus on the questions

ADVANCED BEGINNER

I KNEW | GOT IT NOW | THINK I GOT IT | I DON'T GET IT

CHALLENGE US

Coach

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Self-Assessment

Adjust your competence estimate to the right to focus on the questions

ADVANCED BEGINNER

EMS ASSESSMENT, CARE, AND HOSPITAL PREPARATION

- Administer aspirin and consider oxygen, nitroglycerin, and morphine if needed.
- **Obtain a 12-lead ECG.** If there is ST elevation, notify the receiving hospital with a transmission or interpretation; note the time of onset and first medical contact.
- **Provide prehospital notification** on arrival, transport to ED/cath lab per protocol
- The notified hospital should mobilize resources to respond to STEMI.
- If considering prehospital fibrinolysis, **use a fibrinolytic checklist**
- If out-of-hospital providers cannot complete these initial steps before the patient arrives at the hospital, the ED provider should do so.

Obtaining a 12-Lead ECG

The American Heart Association (AHA) recommends out-of-hospital 12-lead ECG diagnostic programs in all EMS systems, and all EMS systems should take the actions outlined in the table.

EMS actions per AHA recommendations:

I KNEW | I DON'T GET IT

CHALLENGE US

Push ▶ for reading content contact

EMS Action	Recommendation
Obtain a 12-lead ECG if available	The AHA recommends routine use of 12-lead out-of-hospital ECGs for patients with signs and symptoms of possible ACS.
Provide prearrival notification to the hospital	Prearrival notification of the ED shortens the time to treatment (10 to 60 minutes has been achieved in clinical studies) and speeds reperfusion therapy with fibrinolytics or PCI or both, which may reduce mortality and minimize myocardial injury
Complete a fibrinolytic checklist if appropriate	If STEMI is identified on the 12-lead ECG complete a fibrinolytic checklist if appropriate

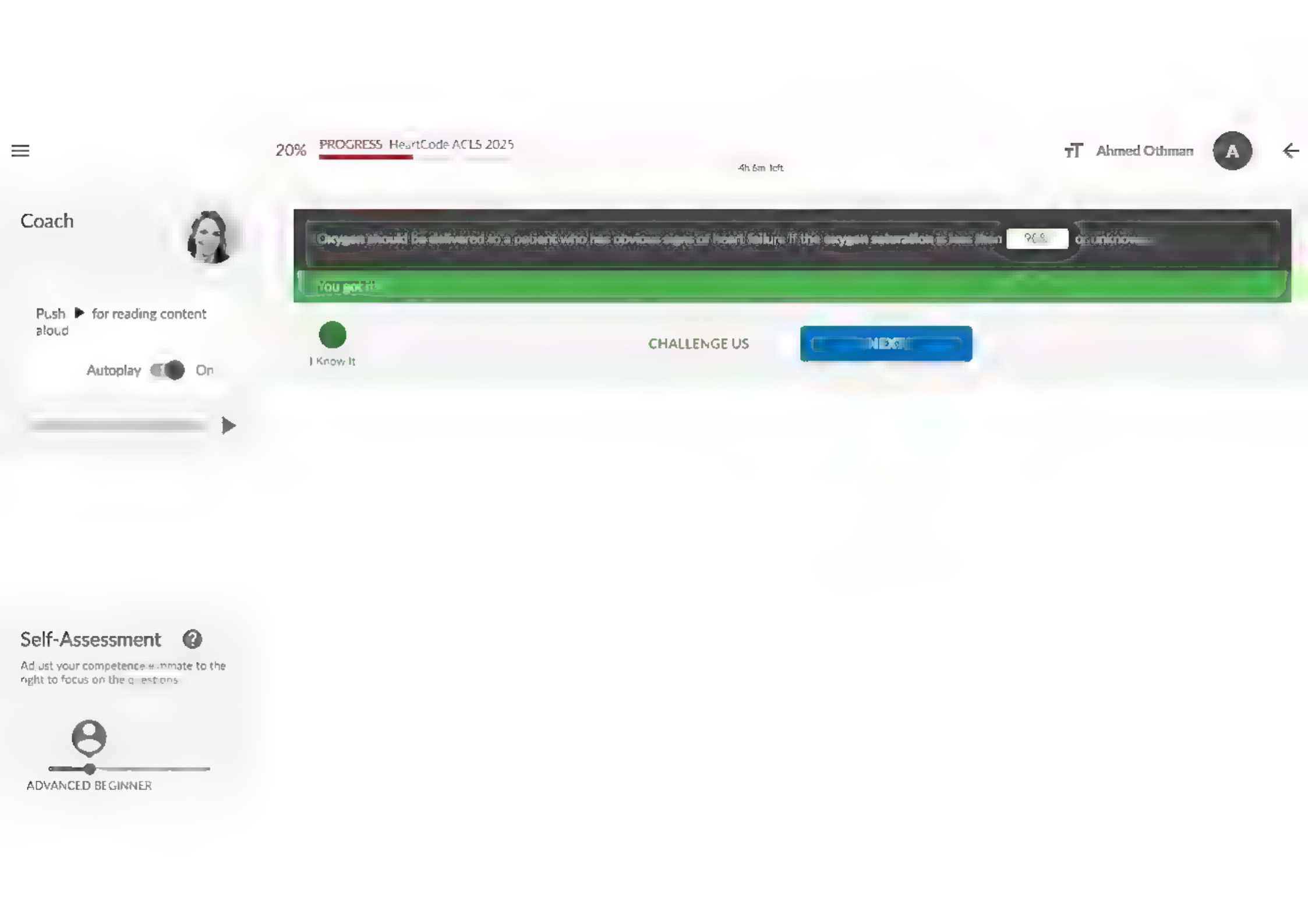
CLOSE

Self-Assessment

Adjust your competence estimate to the right to focus on the questions.

EMS actions per AHA recommendations

I KNEW | GOT IT NOW | THINK I GOT IT | I DON'T GET IT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Coach
You got it!
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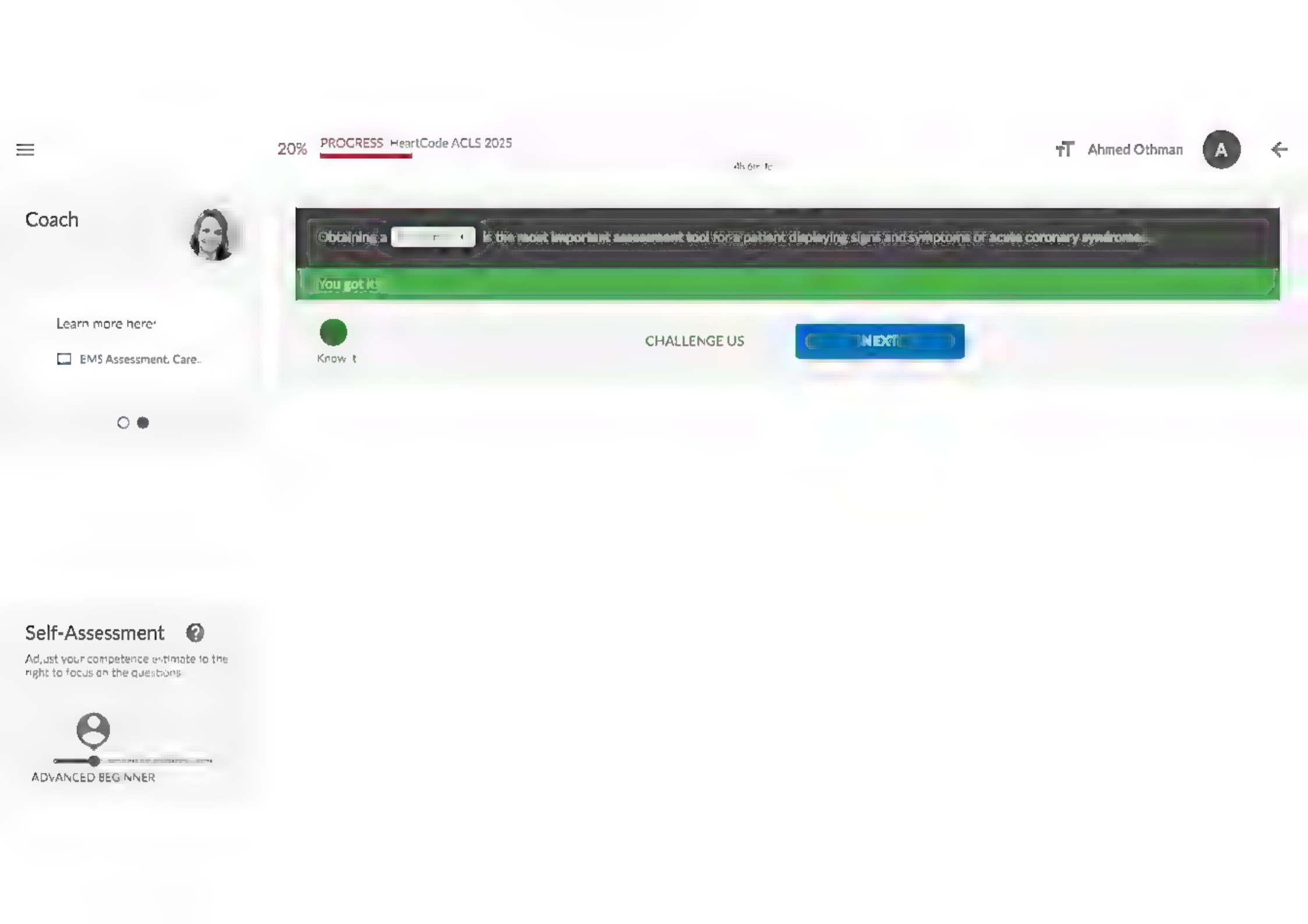
I Know It
CHALLENGE US
NEXT
Self-Assessment
ADVANCED BEGINNER


20% PROGRESS HeartCode ACLS 2025
Ahmed Othman
A
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Obtaining a is the most important assessment tool for a patient displaying signs and symptoms of acute coronary syndrome.
You got it!
Learn more here:
EMS Assessment, Care..
Know it
CHALLENGE US
NEXT
Self-Assessment
Adjust your competence estimate to the right to focus on the questions.
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CONCURRENT ED OR CATH LAB ASSESSMENT

The ED high-performance team should quickly evaluate the patient with potential ACS on the patient's arrival. **Within the first 10 minutes, obtain a 12-lead ECG** (if not already performed before arrival) and **assess the patient.**

Initial Actions

- **Activate STEMI team upon EMS notification.**
- **Assess ABCs**, give oxygen if needed
- Check **vital signs** and evaluate **oxygen saturation.**
- Establish **intravenous (IV) access**
- Perform a **brief, targeted history** and a **physical exam.**
- Review and complete the **fibrinolytic checklist**, check **contraindications.**
- Obtain **cardiac markers, ECG, complete blood counts, and coagulation studies**
- Obtain a **portable chest x-ray** (in less than 30 minutes), **do not delay transport to the cath lab**

1 2 3 NEXT

Self-Assessment

Adjust your competence estimate to the right to focus on the questions

ADVANCED BEGINNER

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CONCURRENT ED OR CATH LAB ASSESSMENT

Initial Actions

- Activate STEMI team upon EMS notification.
- Assess ABCs, give oxygen if needed
- Check vital signs and evaluate oxygen saturation.
- Establish intravenous (IV) access
- Perform a brief, targeted history and a physical exam.
- Review and complete the fibrinolytic checklist, check contraindications.
- Obtain initial cardiac marker levels, complete blood counts, and coagulation studies.
- Obtain a portable chest x-ray (in less than 30 minutes, do not delay transport to the cath lab

The results of cardiac markers, chest x-ray, and laboratory studies should not delay reperfusion therapy unless clinically necessary, for example, in suspected aortic dissection or coagulopathy

Self-Assessment

Adjust your competence estimate to the right to focus on the questions

ADVANCED BEGINNER

1 2 3 NEXT

CHALLENGE US

Coach

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CONCURRENT ED OR CATH LAB ASSESSMENT

Perform a targeted evaluation focus ng on chest discomfort, signs and symptoms of heart fa lure cardiac h story risk factors for ACS and historical features that may prec ude the use of fibrinolytics.

For a patient with STEMI the **goals of reperfusion** are:

- **First medical contact to balloon inflation within 90 minutes**
- **Door to drug (fibrinolytics) within 30 minutes of arrival.**

The **12-lead ECG** is at the center of the dec sion pathway n managing ischem c chest d scomfort and s the **only way to identify STEMI**

You can see an examp e ECG of an **anterior STEMI** be ow.

Self-Assessment

Ad,ust your competence estimate to the right to focus on the questions

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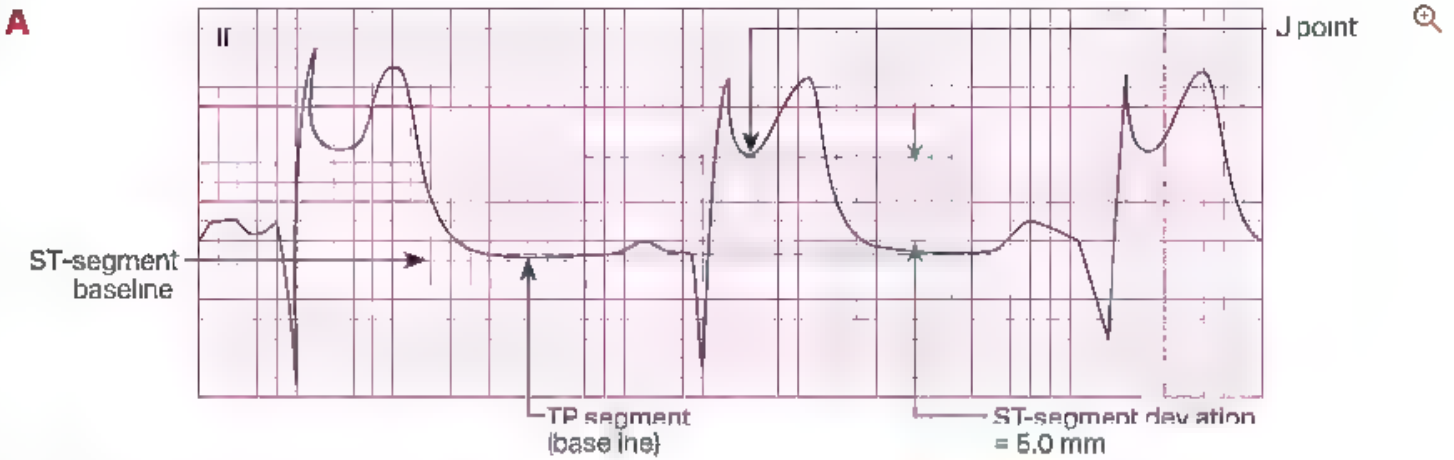
CONCURRENT ED OR CATH LAB ASSESSMENT

Below you can also see an example of how to measure ST-segment elevation



A. Inferior MI The ST segment has no low point (it is covered or concave).

PREVIOUS 1 2 3 NEXT

Self-Assessment

Adjust your competence estimate to the right to focus on the questions

ADVANCED BEGINNER

CHALLENGE US

Coach

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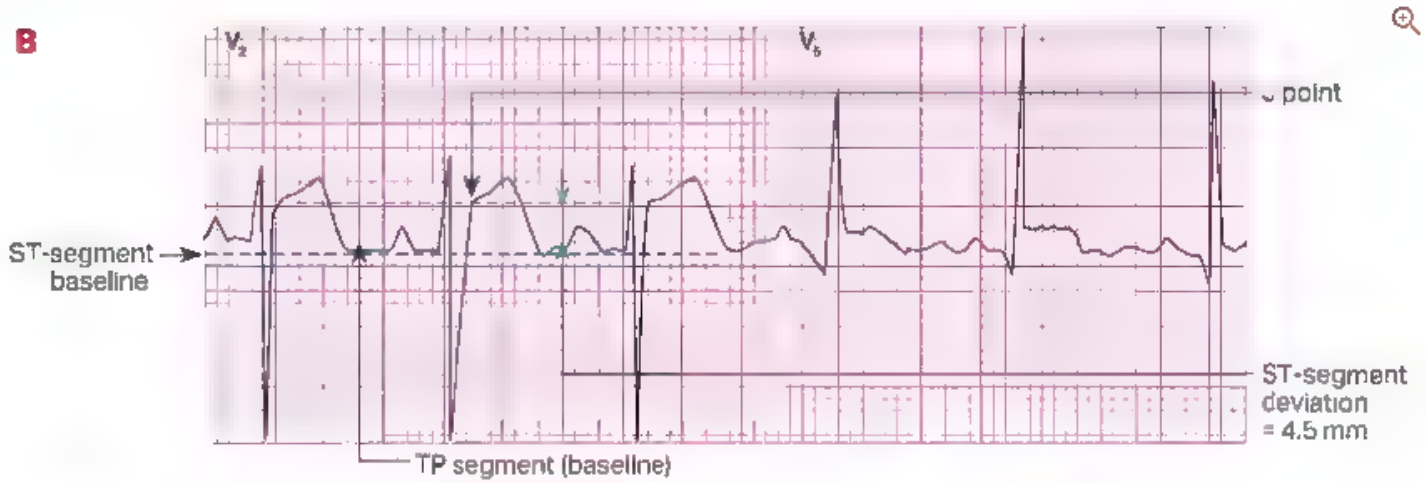
CONCURRENT ED OR CATH LAB ASSESSMENT

A, Inferior MI The ST segment has no low point (it is covered or concave).



B. Anterior MI

Self-Assessment

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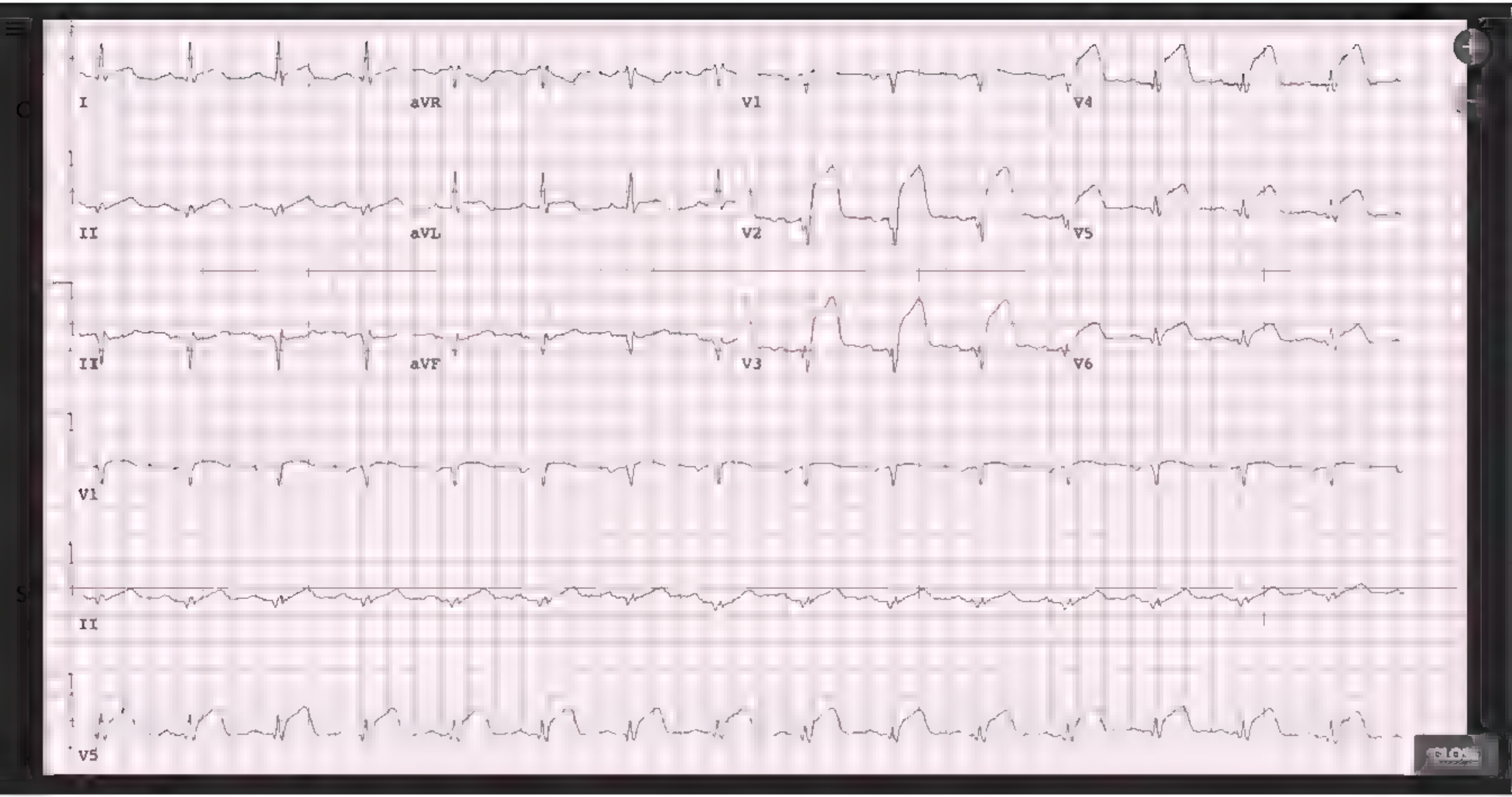
I
aVR
V1
V4
II
aVL
V2
V5
II
aVF
V3
V6
V1
II
V5

Coach

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CONCURRENT ED OR CATH LAB ASSESSMENT

Patient General Treatment

Unless allergies or contraindications exist, **consider these 4 agents in patients with ischemic-type chest discomfort**

- If O_2 saturation is less than 90%, **start oxygen** at 4 L/min, titrate.
- **Aspirin** 162 to 325 mg (if not given by EMS).
- **Nitroglycerin** sublingual or translingual.
- **Morphine** IV if discomfort not relieved by nitroglycerin
- Consider administration of $P2Y_{12}$ inhibitors.

Because out-of-hospital providers may have given these agents already, administer initial or supplemental doses as indicated

PREVIOUS 1 2 3

KNEW DON'T GET

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Self-Assessment

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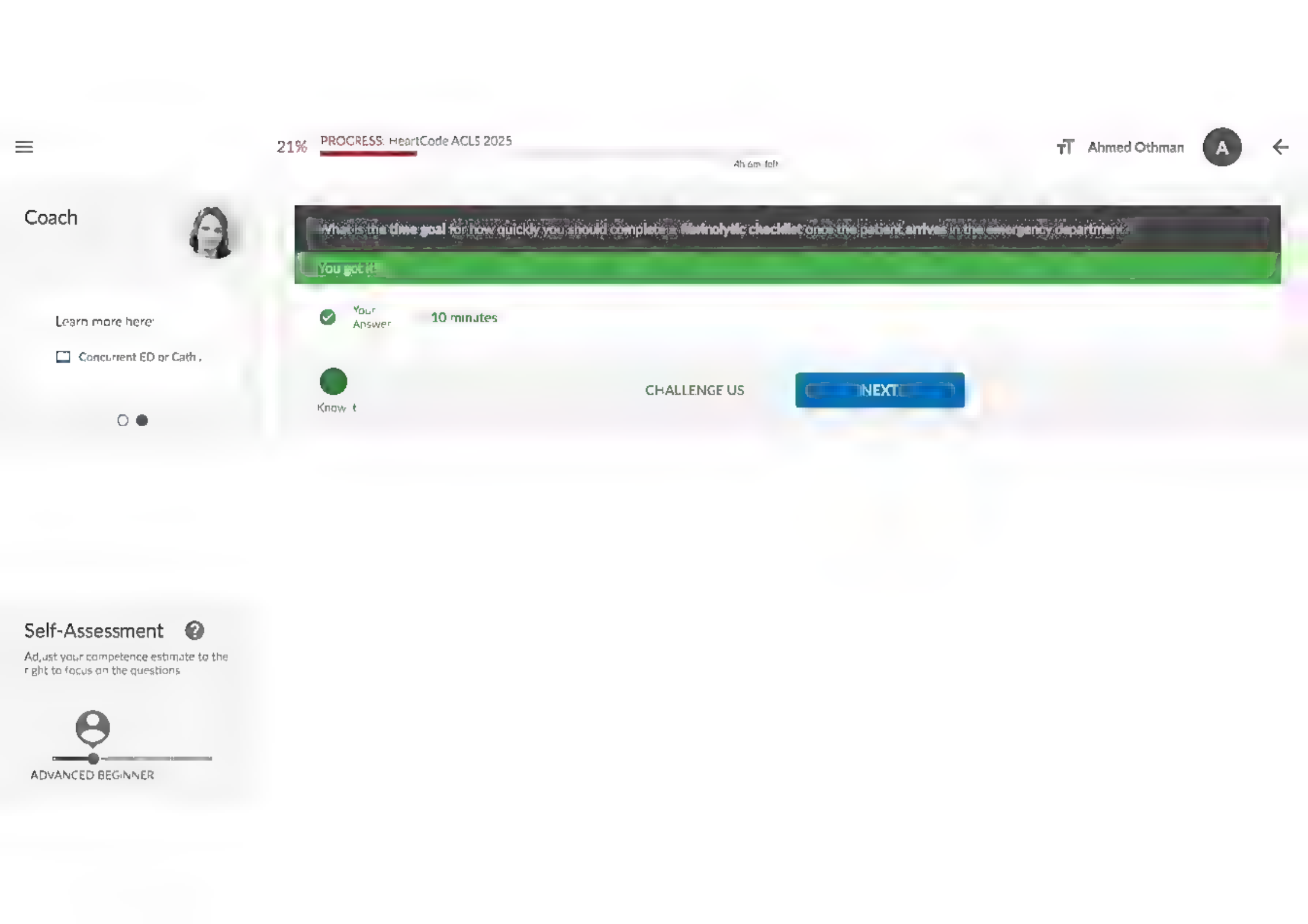
21% PROGRESS: HeartCode ACLS 2025
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You got it!
Your Answer
10 minutes
Learn more here
Concurrent ED or Cath ,
CHALLENGE US
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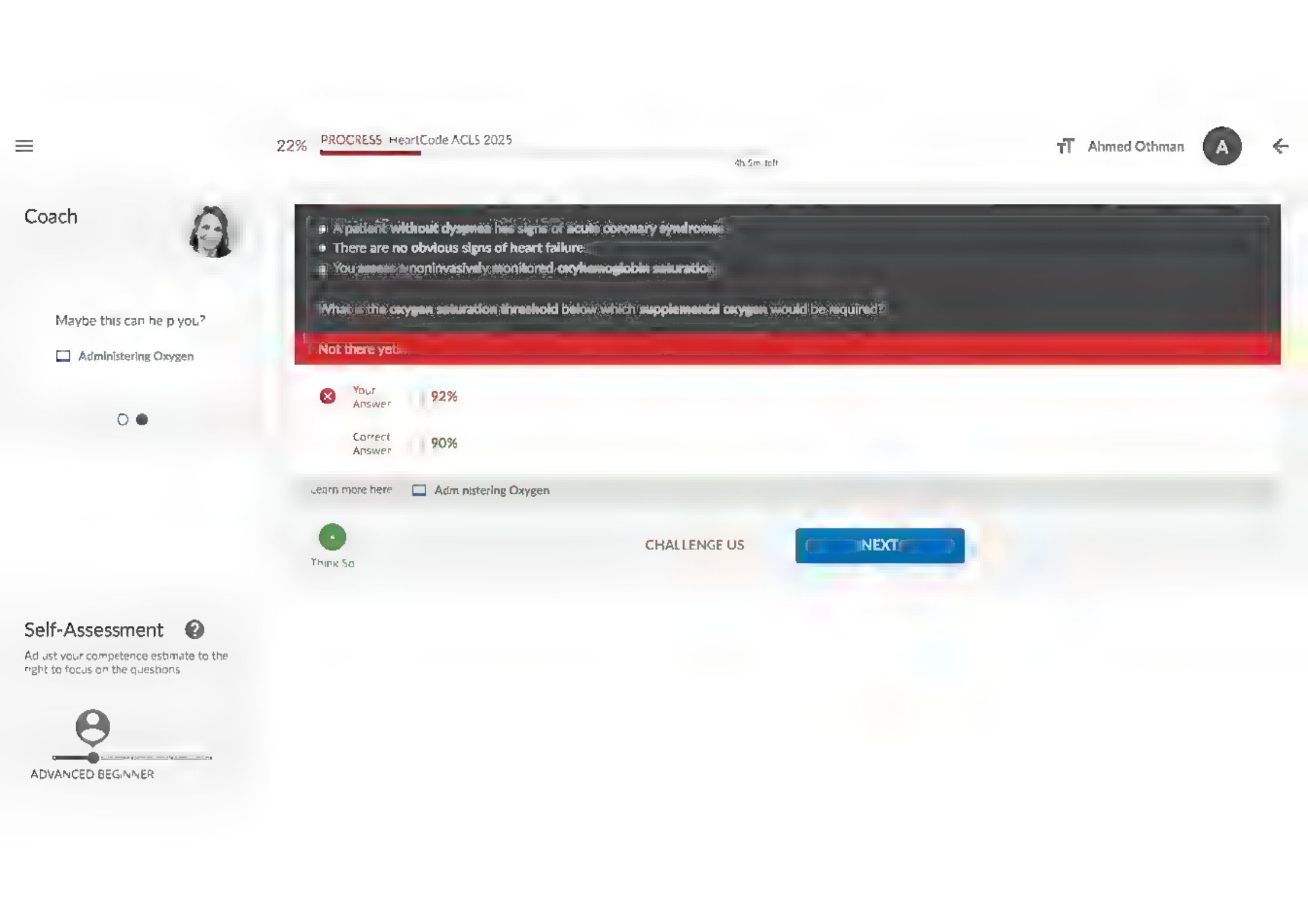
Know it
Self-Assessment
Adjust your competence estimate to the right to focus on the questions
ADVANCED BEGINNER


22% PROGRESS HeartCode ACLS 2025
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Ahmed Othman
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Coach
Maybe this can he p you?
Administering Oxygen
A patient without dyspnea has signs of acute coronary syndrome.
There are no obvious signs of heart failure.
You assess noninvasively monitored oxyhemoglobin saturation.
What is the oxygen saturation threshold below which supplemental oxygen would be required?
Not there yet...
Your Answer 92%
Correct Answer 90%
Learn more here
Administering Oxygen
Think So
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Self-Assessment
Adjust your competence estimate to the right to focus on the questions
ADVANCED BEGINNER

22% PROGRESS: HeartCode ACLS 2025

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What blood component is activated by aspirin administration during the management of a patient with acute coronary syndrome?

You go

Learn more here:

Administering Aspirin (...

Your Answer

Platelets

Plate ets are one of the principal and earliest partic pants in thrombus formation

Know t

CHALLENGE US

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Self-Assessment

Adjust your competence estimate to the right to focus on the questions

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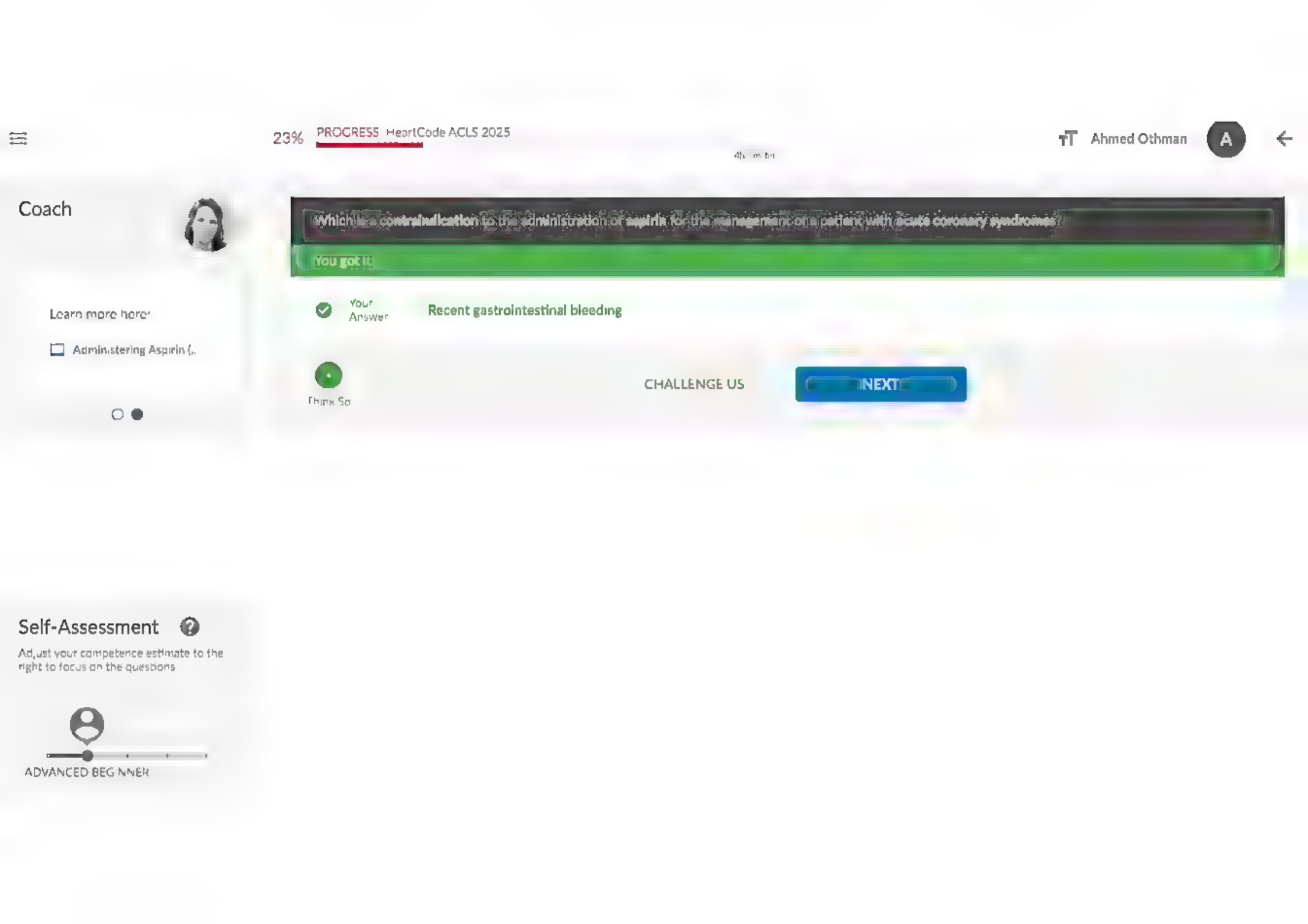
23% PROGRESS HeartCode ACLS 2025
Ahmed Othman
A
Coach
Which is a contraindication to the administration of aspirin for the management of patients with acute coronary syndromes?
You got it!
Your Answer
Recent gastrointestinal bleeding
Learn more here:
Administering Aspirin (..
Think So
CHALLENGE US
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Self-Assessment
Adjust your competence estimate to the right to focus on the questions
ADVANCED BEGINNER

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ADMINISTERING ASPIRIN (ACETYLSALICYLIC ACID)

A dose of **162 to 325 mg of non–enteric-coated or chewed aspirin** causes immediate and near-total **inhibition of thromboxane A_2 production by inhibiting platelet cyclooxygenase (COX-1)**

Platelets are one of the principal and earliest participants in thrombus formation. This rapid inhibition also **reduces coronary reocclusion** and other recurrent events independently and after fibrinolytic therapy.

How to Give Aspirin

If the patient has not taken aspirin and has **no history of true aspirin allergy** and **no evidence of recent GI bleeding**, **give the patient aspirin (162 to 325 mg) to chew**. In the initial hours of an ACS, aspirin is **absorbed better when chewed than when swallowed**, particularly if the patient has received morphine.

Use **rectal aspirin suppositories** (300 mg) for patients with nausea, vomiting, active peptic ulcer disease, or other disorders of the upper GI tract.

Aspirin is **associated with a reduction in mortality** for patients with ACS.

CHALLENGE US

CLOSE

Coach

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ADMINISTERING NITROGLYCERIN (GLYCERYL TRINITRATE)

Routine use of IV nitroglycerin is not indicated and has not been shown to significantly reduce mortality in STEMI. However, IV nitroglycerin is indicated and used widely in ischemic syndromes and is preferred over topical or long-acting forms because it can be adjusted in a patient with potentially unstable hemodynamics and clinical condition.

Indications for initiating IV nitroglycerin in STEMI

- Recurrent or continuing chest discomfort unresponsive to sublingual or transungual nitroglycerin
- Pulmonary edema complicating STEMI
- Hypertension complicating STEMI

Treatment goals using IV nitroglycerin

PREVIOUS 1 2 3

KNEW [illegible] I DON'T GET IT

CHALLENGE US

Self-Assessment

Adjust your competence estimate to the right to focus on the questions

ADVANCED BEGINNER

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ADMINISTERING NITROGLYCERIN (GLYCERYL TRINITRATE)

Nitroglycerin effectively reduces ischemic chest discomfort and .t has beneficial hemodynamic effects The physio.ogic effects of nitrates reduce left ventricular (LV) and right ventricular (RV) preload through peripheral arterial and venous dilation

How to Give Nitroglycerin

Give the patient 1 sublingual nitroglycerin tablet (or translingual dose) every 3 to 5 minutes for ongoing symptoms if permitted by medical control and no contraindications exist You may repeat the dose twice (total of 3 doses)

Adm n ster n troglycer n only f the patient remains hemodynam ca ly stable systo c blood pressure ,SBP) greater than 90 mm Hg or no ower than 30 mm Hg below base ine (f known) and a heart rate of 50 to 100/m n

1 2 3 NEXT

CHALLENGE US

Self-Assessment

Adjust your competence estimate to the right to focus on the questions

ADVANCED BEG NNER

Coach

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ADMINISTERING NITROGLYCERIN (GLYCERYL TRINITRATE)

Nitrog ycerin is a venodi ator' use 't cautious y or not at al n patients with inadequate ventricu ar pre oad These s tuations nclude

- **Inferior wa l MI and RV infarction** RV nfarction may comp cate an inferior wa l MI Patients with acute RV infarction depend on RV fi ling pressures to ma nta n card ac output and blood pressure f you cannot ru e out RV infarction, use caution in administering nitrates to patients w th an inferior STEMI f you confirm RV infarction by r ght-sided precordia eads, or if an exper enced provider confirms t through c nical find ngs, then nitrog ycerin and other vasodilators such as morphine or vo ume-depleting drugs (diuretics) are contraindicated as we l.
- **Hypotension, bradycardia, or marked tachycardra** Avoid u sing n troglycerin in patients with hypotens on (SBP less than 90 mm Hg), marked bradycard a (less than 50/min), or tachycardia
- **Recent phosphodiesterase inhibitor use** Avoid us ng nitroglycer n if you suspect or know that the patient has taken sildenafi or vardenafil within the previous 24 hours or tadalafi within 48 hours These agents are genera ly used for erectile dysfunction or in cases of pulmonary hypertension, and n combination w th n trates, they may cause severe hypotension refractory to vasopressor agents.

PREVIOUS 1 2 3 NEXT

CHALLENGE US

Self-Assessment

Ad,ust your competence estimate to the r ght to focus on the questions

ADVANCED BEG NNER

Coach

ADMINISTERING NITROGLYCERIN (GLYCERYL TRINITRATE)

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Treatment goals using IV nitroglycerin

For relief of ischemic chest discomfort:

- Titrate to effect
- Keep SBP greater than 90 mm Hg.
- Limit drop in SBP to 30 mm Hg below baseline in hypertensive patients.

For improvement in pulmonary edema and hypertension.

- Titrate to effect
- Limit drop in SBP to 10% of baseline in normotensive patients
- Limit drop in SBP to 30 mm Hg below baseline in hypertensive patients.

Self-Assessment

Adjust your competence estimate to the right to focus on the questions

ADVANCED BEGINNER

PREVIOUS 1 2 3

KNEW DON'T GET

CHALLENGE US

Ahmed Othman

Coach

What is a physiologic effect of nitroglycerin?

You got it!

Your Answer: Reduces preload

Learn more here:

Administering Nitrogly..

Know it

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Self-Assessment

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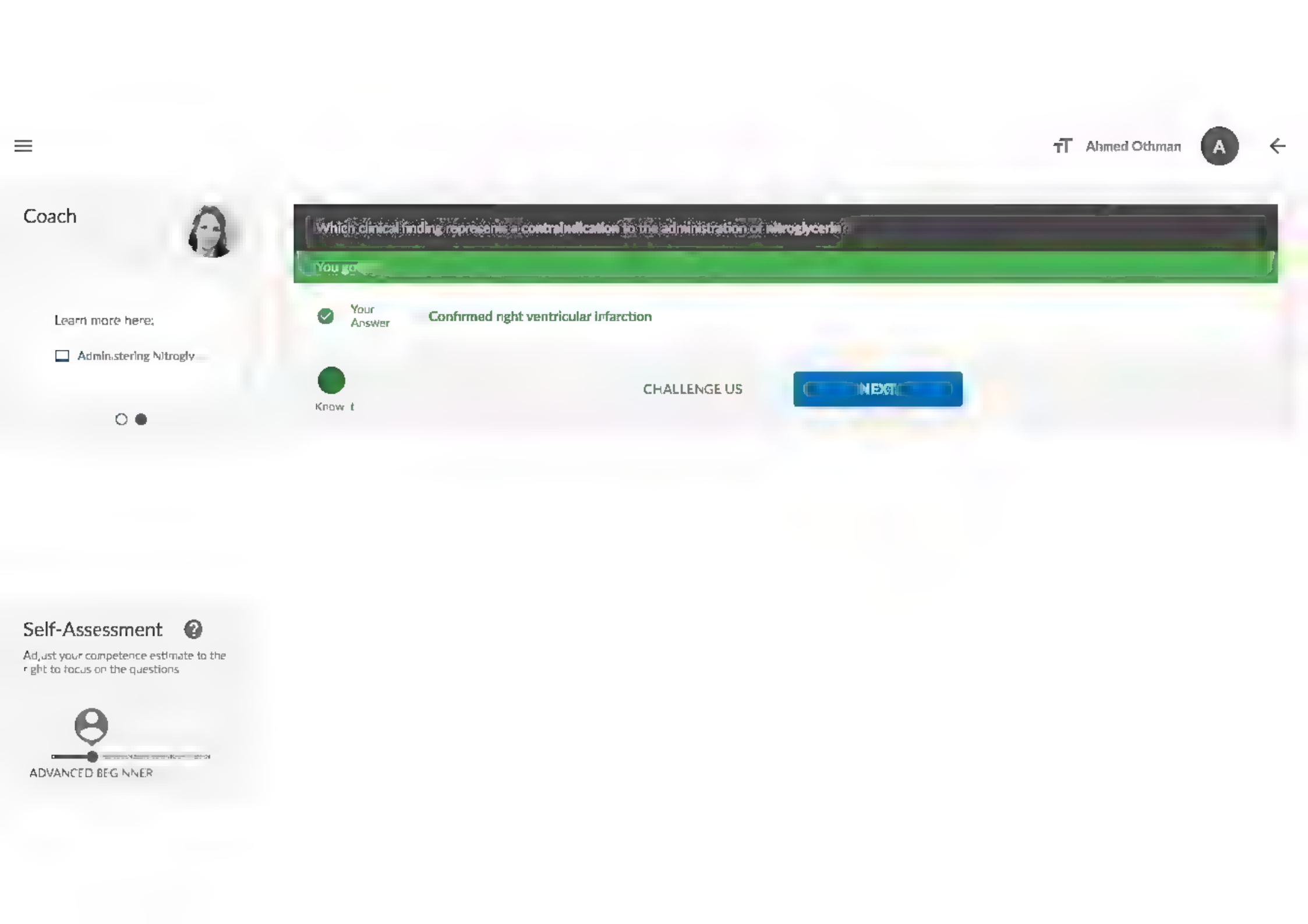
Ahmed Othman
A
Coach
Which clinical finding represents a contraindication to the administration of nitroglycerin
You go
Your Answer
Confirmed right ventricular infarction
Learn more here:
Administering Nitrogly
Know it
CHALLENGE US
NEXT
Self-Assessment
Adjust your competence estimate to the right to focus on the questions
ADVANCED BEGINNER

Coach

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ADMINISTERING MORPHINE

Indications

Cons der administering morphine for **severe chest discomfort that does not respond to sublingual or translingual nitroglycerin**. If authorized by protoco or med ca control. Hea thcare prov ders can consider g ving ana ges cs such as morphine while **monitoring the patient s blood pressure and respiratory rate** Morphine is **indicated in STEMI when chest discomfort does not respond to nitrates**

Use morphine with caution in NSTE-ACS because of an association with **increased mortality**

In add tion, **morphine may mask symptoms of myocardial ischemia and decrease absorption of important orally administered drugs** such as antiplate ets ,$P2Y_{12}$ receptor blockers). **Use morphine with caution for patients with unstable angina**

1 2 NEXT

CHALLENGE US

Self-Assessment

Ad,ust your competence estimate to the r ght to focus on the questions

ADVANCED BEG NNER

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ADMINISTERING MORPHINE

Physiologic Effects

Morphine may be used to manage ACS because it

- **Produces central nervous system analgesia**, which reduces the adverse effects of neurohumoral activation, catecholamine release, and heightened myocardial oxygen demand
- **Alleviates dyspnea**
- **Produces venodilation**, which reduces LV preload and oxygen requirement
- **Decreases systemic vascular resistance**, which reduces LV afterload
- **Helps redistribute blood volume** in patients with acute pulmonary edema

Remember, **morphine is a venodilator**. As with nitroglycerin, **use smaller doses and carefully monitor physiologic response** before administering additional doses in patients who may be **preload dependent**. If hypotension develops, administer fluids as a first line of therapy.

PREVIOUS 1 2

[redacted]

CHALLENGE US

Self-Assessment

Adjust your competence estimate to the right to focus on the questions

ADVANCED BEGINNER

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Coach

Which class of medications commonly given to patients with acute coronary syndromes may be adversely affected by morphine administration?

You got it!

Your Answer

Oral antiplatelet medications

Morphine can decrease absorption of oral antiplatelet medications, which include clopidogrel, prasugrel, and ticagrelor

Learn more here:

Administering Morphine

Know it

CHALLENGE US

NEXT

Self-Assessment

Adjust your competence estimate to the right to focus on the questions

ADVANCED BEGINNER

Ahmed Othman A

Coach

What is a benefit of morphine when given for the management of acute coronary syndromes?

You got it

Your Answer: Central nervous system analgesia

Learn more here

Admin stering Morphine

Know t

CHALLENGE US

NEXT

Self-Assessment

Ad ust your competence estmate to the right to focus on the questions

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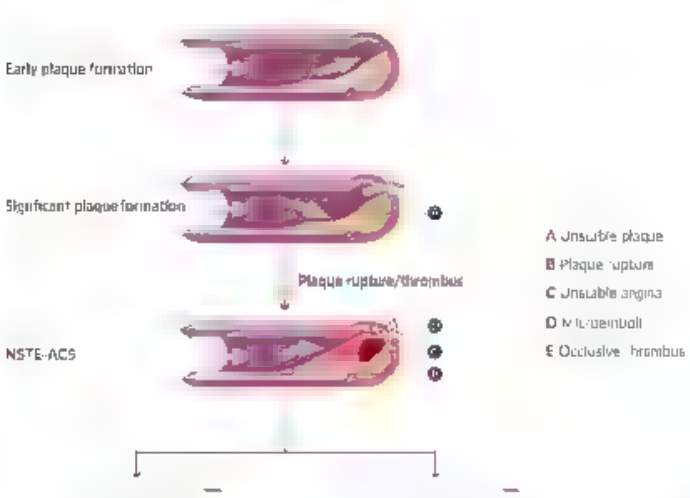
CLASSIFYING PATIENTS BASED ON ST-SEGMENT DEVIATION

Patients with coronary atherosclerosis may develop a spectrum of clinical syndromes that represent varying degrees of coronary artery occlusion. These syndromes include non-**ST-segment elevation ACS**, or **NSTE-ACS**, and **ST-segment elevation myocardial infarction** or **STEMI**. Sudden cardiac death may occur with any of these syndromes. The figure illustrates the pathophysiology of ACS.



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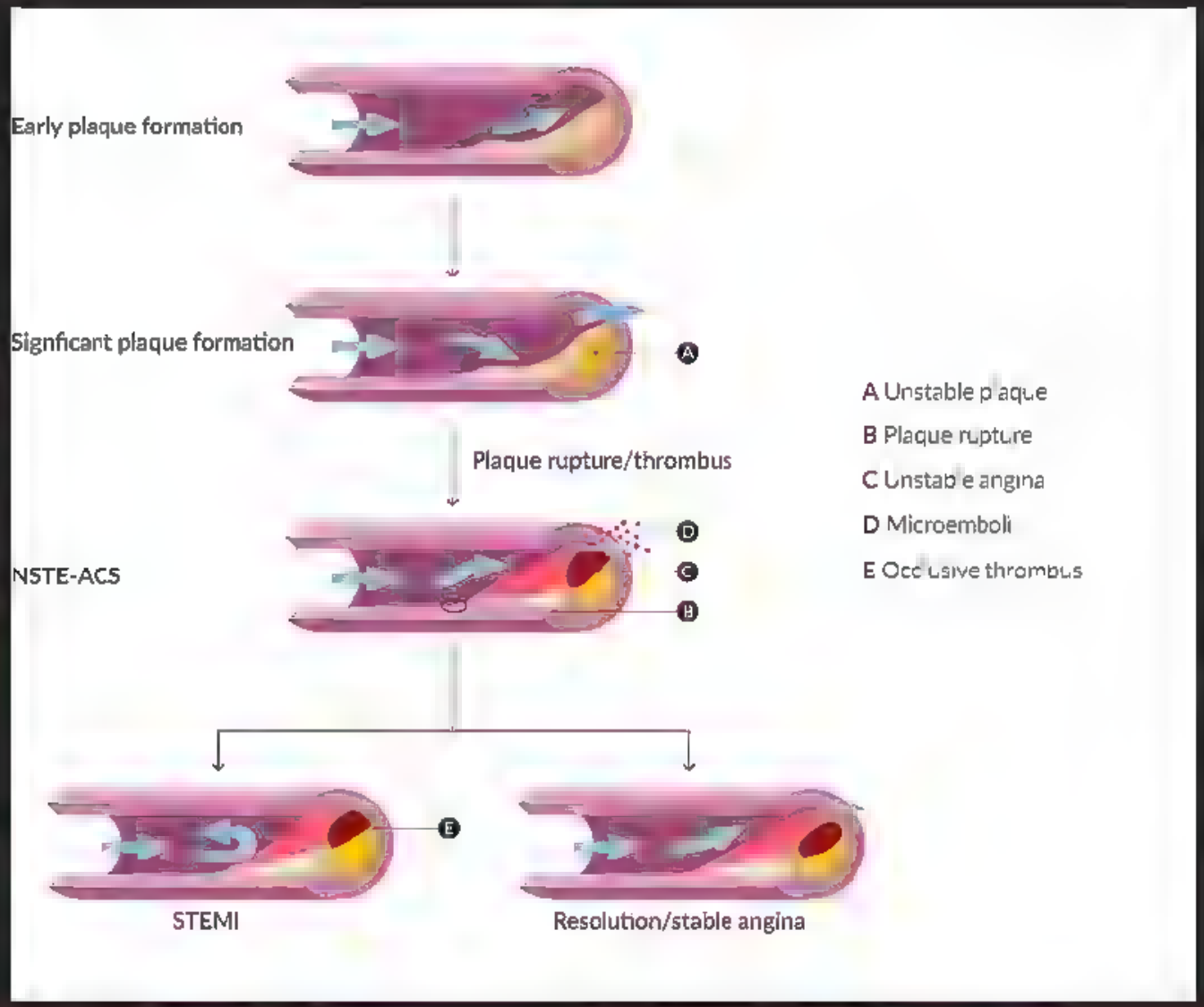
Self-Assessment

Adjust your competence estimate to the right to focus on the questions

ADVANCED BEGINNER

CHALLENGE US


Early plaque formation
Significant plaque formation
A
Plaque rupture/thrombus
NSTE-ACS
D
C
B
E
STEMI
Resolution/stable angina
A Unstable plaque
B Plaque rupture
C Unstable angina
D Microemboli
E Occlusive thrombus

Coach

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CLASSIFYING PATIENTS BASED ON ST-SEGMENT DEVIATION

STEMI

STEMI is characterized by ST-segment elevation in 2 or more contiguous leads or new left bundle branch block (LBBB)

Threshold values for ST-segment elevation consistent with STEMI are

- J-point elevation greater than 2 mm (0.2 mV) in leads V_2 and V_3, 2.5 mm in men younger than 40 years, 1.5 mm in all women
- 1 mm or more in all other leads or by new or presumed new LBBB

NSTE-ACS

High risk

High-risk NSTE-ACS is characterized by ischemic ST segment depression of 0.5 mm (0.05 mV) or greater or dynamic T wave inversion with pain or

Self-Assessment

Adjust your competence estimate to the right to focus on the questions

ADVANCED BEGINNER

KNEW DON'T GET IT

CHALLENGE US

Coach

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CLASSIFYING PATIENTS BASED ON ST-SEGMENT DEVIATION

H gh-risk

High-risk NSTE-ACS is character zed by **ischemic ST-segment depression of 0.5 mm (0.05 mV) or greater or dynamic T-wave inversion with pain or discomfort.**

Nonpersistent or trans ent ST-segment elevation of 0.5 mm or greater for less than 20 minutes is also nc uded n this category.

Low- to ntermediate-risk

Low- to ntermed ate-risk NSTE-ACS s characterized by **normal or nondiagnostic changes n the ST segment or T waves that are inconclusive and require further risk stratification.**

Th s c ass fication nc udes patients w th norma ECGs and those with ST-segment deviation n c ther d rection of ess than 0 5 mm (0.05 mV) or T-wave nversion of 2 mm (0.2 mV) or less

Serial cardiac stud es and functiona testing are appropr ate.

PREVIOUS 1 2

[illegible] KNEW [illegible] [illegible] [illegible] DON'T GET IT

CHALLENGE US

Self-Assessment

Ad,ust your competence estimate to the right to focus on the questions

ADVANCED BEG NNER

Ahmed Othman A

Coach

You obtain a 12-lead ECG in a patient with retrosternal chest pain.

Which electrocardiographic finding is suggestive of high-risk non-ST-segment elevation acute coronary syndromes?

You got it!

Learn more here:

Classifying Patients Bas...

Your Answer: Dynamic T-wave inversion

Know it

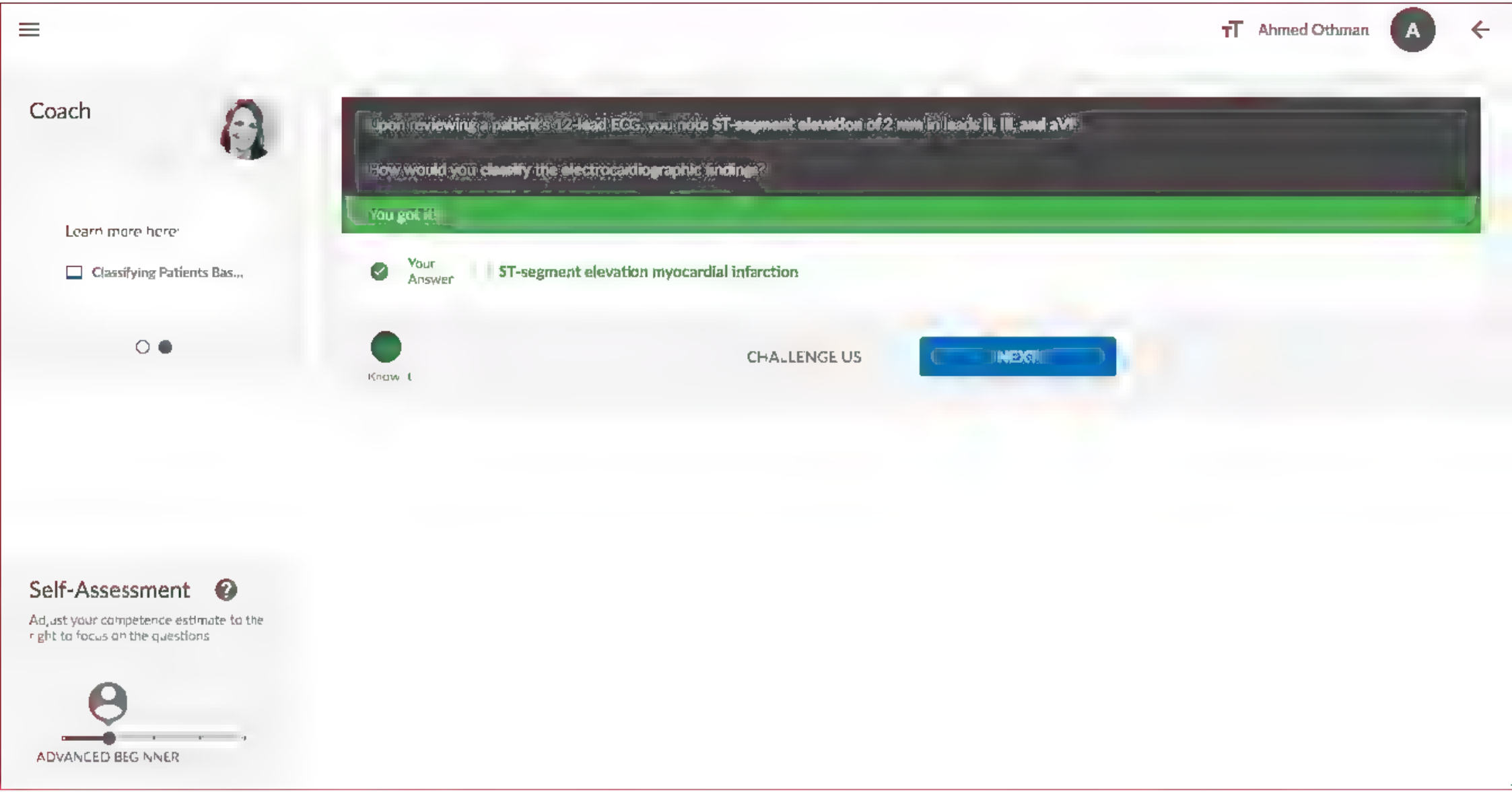
CHALLENGE US

NEXT

Self-Assessment

Adjust your competence estimate to the right to focus on the questions

ADVANCED BEGINNER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A
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Learn more here
Classifying Patients Bas...
Upon reviewing a patient's 12-lead ECG, you note ST-segment elevation of 2 mm in leads II, III, and aVF.
How would you classify the electrocardiographic finding?
You got it!
Your Answer
ST-segment elevation myocardial infarction
CHALLENGE US
NEXT
Self-Assessment
Adjust your competence estimate to the right to focus on the questions
ADVANCED BEGINNER

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Coach

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Autop ay On

TREATMENT STRATEGIES FOR ACS PATIENTS

Strategies

Patents with STEMI usually have complete occlusion of an epicardial coronary artery Treat STE MI by providing early reperfusion therapy achieved with primary percutaneous coronary intervention(or PCI, or fibrinolytics. Reperfusion therapy opens an obstructed coronary artery w th either mechanical means or drugs.

PCI performed in the card ac catheterization laboratory after coronary ang ography, al ows balloon dilation and/or stent placement for an obstructed coronary artery

Early fibrinolytic therapy or direct catheter based reperfusion s an estabi shed standard of care for patients with STE MI who present within 12 hours after symptom onset with no contraindications

1 2 3 4 NEXT

CHALLENGE US

Self-Assessment

Adjust your competence estimate to the right to focus on the questions

ADVANCED BEG NNER

Coach

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TREATMENT STRATEGIES FOR ACS PATIENTS

Early Reperfusion Therapy

Rapidly identify patients with STEMI and **use a fibrinolytic checklist to screen for indications and contraindications to fibrino.ytic therapy** f appropr ate

The **first qualified physician** who enco inters a patient with STEM should **interpret** or **confirm** the **12-lead ECG**, determine the **risk/benefit of reperfusion therapy** and **direct administration of fibrinolytic therapy** or **activation of the PCI team** Early activation of PCI may occ ur with estabi shed protoco s.

Recommended time frames

- For PCI, the goa is first medical contact to ba loon inflation time of 90 minutes or less
- For patients at a non PCI-capable hospita , time from first medica. contact to device should be less than 120 minutes when considering primary PC but systems should strive to ach eve the shortest time possible
- If fibrinolysis is the intended reperfusion the longest acceptable ED door-to-needle time (needle time is the beginning of infusion of a fibrinolytic agent) is 30 minutes but systems should strive to achieve the shortest time possible

PREVIOUS 1 2 3 4 NEXT

Self-Assessment

Adjust your competence estimate to the right to focus on the questions

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CHALLENGE US

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TREATMENT STRATEGIES FOR ACS PATIENTS

Rapidly identify patients with STEMI and use a fibrinolytic checklist to screen for indications and contraindications to fibrinolytic therapy when appropriate

The first qualified physician who encounters a patient with STEMI should interpret or confirm the 12-lead ECG, determine the risk/benefit of reperfusion therapy and direct administration of fibrinolytic therapy or activation of the PCI team. Early activation of PCI may occur with established protocols.

Recommended time frames

- For PCI, the goal is first medical contact to balloon inflation time of 90 minutes or less
- For patients at a non–PCI-capable hospital, time from first medical contact to device should be less than 120 minutes when considering primary PCI, but systems should strive to achieve the shortest time possible
- If fibrinolysis is the intended reperfusion, the longest acceptable ED door-to-needle time (needle time is the beginning of infusion of a fibrinolytic agent) is 30 minutes, but systems should strive to achieve the shortest time possible
- Consider patients who are ineligible for fibrinolytic therapy for transfer to a PCI facility, regardless of delay, but prepare for a door-to-departure time of 30 minutes

PREVIOUS 1 2 3 4 NEXT

Self-Assessment

Adjust your competence estimate to the right to focus on the questions

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CHALLENGE US

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TREATMENT STRATEGIES FOR ACS PATIENTS

Choosing Primary PCI

The most common form of PCI is coronary angioplasty with stent placement and primary PCI is preferred over fibrinolytic administration. Many studies have shown PCI to be superior to fibrinolysis in the combined end points of death, stroke and reinfarction for patients presenting between 3 and 12 hours after onset.

Interventional strategies for the management of STEMI are as follows.

Primary PCI The patient is taken to the catheterization laboratory for PCI immediately after hospital presentation.

Rescue PCI The patient is initially treated with fibrinolytic therapy. The patient does not show signs of reperfusion (lack of ST resolution more than 50% after 1 hour of fibrinolytic therapy administration) and therefore is referred for rescue PCI.

Pharmacoinvasive strategy The patient is initially treated with fibrinolytic therapy with the intention to perform coronary angiography and PCI if appropriate.

Considerations for the use of primary PCI

- PCI is the treatment of choice for the management of STEMI when it can be performed effectively with a first medical contact-to-balloon inflation time of 90 minutes or less by a skilled provider at a skilled PCI

PREVIOUS 1 2 3 4 NEXT

Self-Assessment

Adjust your competence estimate to the right to focus on the questions.

ADVANCED BEGINNER

CHALLENGE US

Coach

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TREATMENT STRATEGIES FOR ACS PATIENTS

1 hour of fibrinolytic therapy administration) and therefore is referred for rescue PCI.

Pharmacoinvasive strategy. The patient is initially treated with fibrinolytic therapy with the intention to perform coronary angiography and PCI if appropriate.

Considerations for the use of primary PCI

- PCI is the treatment of choice for the management of STEMI when it can be performed effectively with a first medical contact to balloon inflation time of 90 minutes or less by a skilled provider at a skilled PCI facility
- Primary PCI may also be offered to patients presenting to non–PCI-capable centers if PCI can be initiated promptly within 120 minutes after first medical contact
- For patients admitted to a non–PCI center transferring for PCI vs administering on-site fibrinolytics may have some benefit in terms of reinfarction, stroke, and a trend to lower mortality when PCI is performed within 120 minutes after first medical contact
- PCI is also preferred in patients with contraindications to fibrinolytics and is indicated in patients with high-risk features, heart failure complicating MI, or cardiogenic shock.

Self-Assessment

Adjust your competence estimate to the right to focus on the questions

ADVANCED BEGINNER

Coach

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TREATMENT STRATEGIES FOR ACS PATIENTS

Using Fibrinolytic Therapy

Administer a fibrinolytic agent or "clot buster" to patients with ST-segment elevation greater than 2 mm (0.2 mV) in leads V_2 and V_3 and 1 mm or more in all other leads or by new or presumed new LBBB (leads II, aVF, leads V_5, V_6, leads I and aVL) without contraindications. Fibrin-specific agents achieve normal flow in about 50% of patients given these drugs.

Examples of fibrin-specific drugs are alteplase, reteplase, and tenecteplase. Streptokinase was the first fibrinolytic used widely, but it is not fibrin specific.

Considerations for the use of fibrinolytic therapy

- In the absence of contraindications and in the presence of a favorable risk-benefit ratio, fibrinolytic therapy is one option for reperfusion in patients with STEMI and onset of symptoms within 12 hours after presentation with qualifying ECG findings and if PCI is not available within 90 minutes after first medical contact.
- In the absence of contraindications, it is also reasonable to give fibrinolytics to patients with onset of

PREVIOUS 1 2 3 4

KNEW DON'T GET

CHALLENGE US

Self-Assessment

Adjust your competence estimate to the right to focus on the questions

ADVANCED BEGINNER

Coach

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TREATMENT STRATEGIES FOR ACS PATIENTS

- n the absence of contraindications it is also **reasonable to give fibrinolytics to patients with onset of symptoms within the prior 12 hours** and ECG nd ngs consistent with **true posterior MI** Experienced prov ders w l recognize th s as a cond tion where **ST-segment depression** in the early precordial leads (V_1-V_3) is equivalent to **ST-segment elevation** in others When these changes are associated with other ECG nd ngs, it suggests a "STE M " on the **posterior wall of the heart**.
- Fibrino ytics are general y **not recommended** for patients presenting **more than 12 hours after onset of symptoms** But they may be considered if schem c chest d scomfort continues w th pers s ent ST-segment e evation

Do not give fibrinolytics to the following patients:

- Those who present **more than 24 hours after the onset of symptoms**
- Those with **ST-seement depression** unless a true posterior MI is suspected

PREVIOUS 1 2 3 4

KNEW

DON'T GET IT

CHALLENGE US

Self-Assessment

Ad,ust your competence estimate to the r ght to focus on the questions

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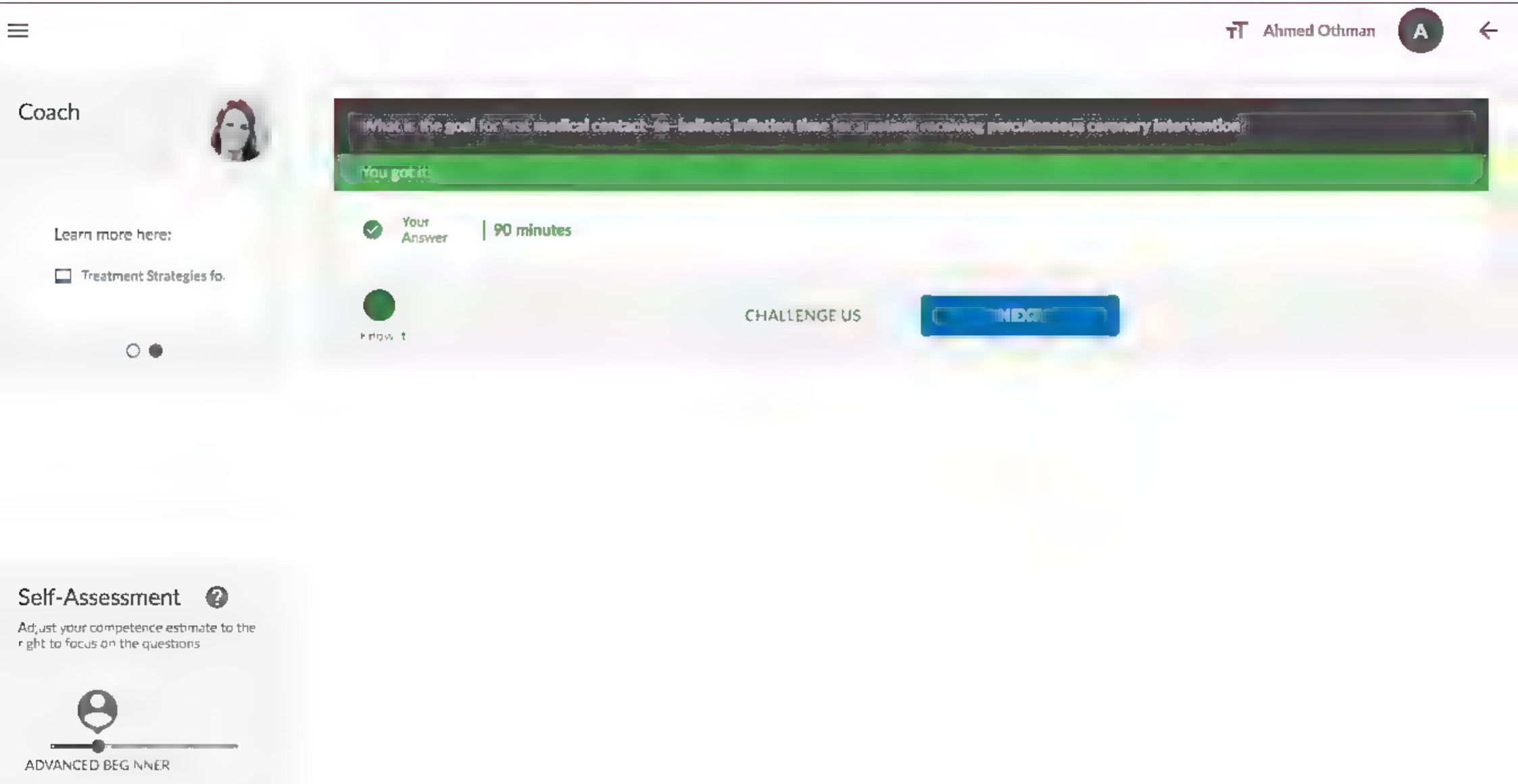
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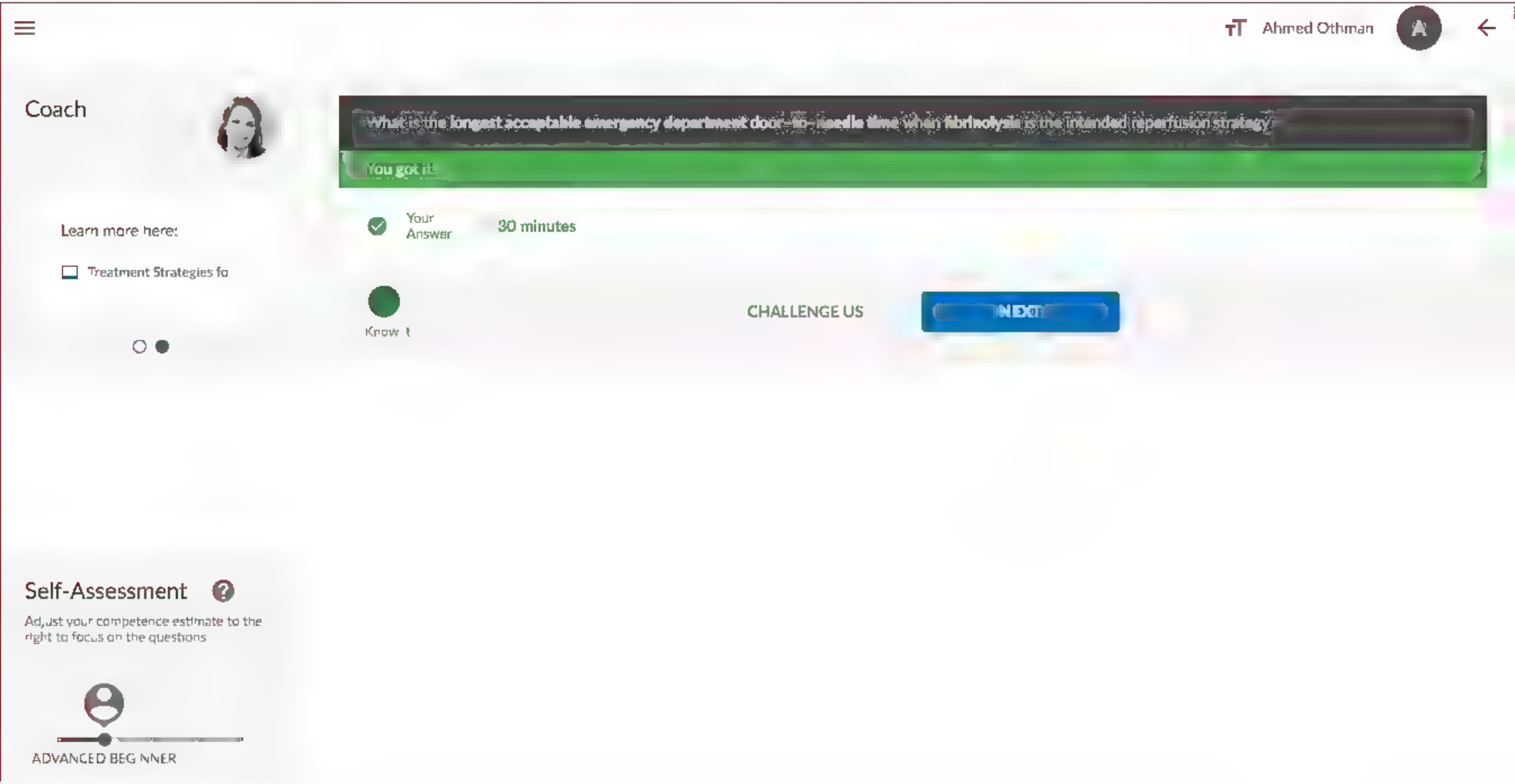
Treatment Strategies fo
You got it!
Your Answer
90 minutes
CHALLENGE US
Self-Assessment
ADVANCED BEG NNER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You got it!
Your Answer
30 minutes
Learn more here:
Treatment Strategies fo
Know t
CHALLENGE US
NEXT
Self-Assessment
Adjust your competence estimate to the right to focus on the questions
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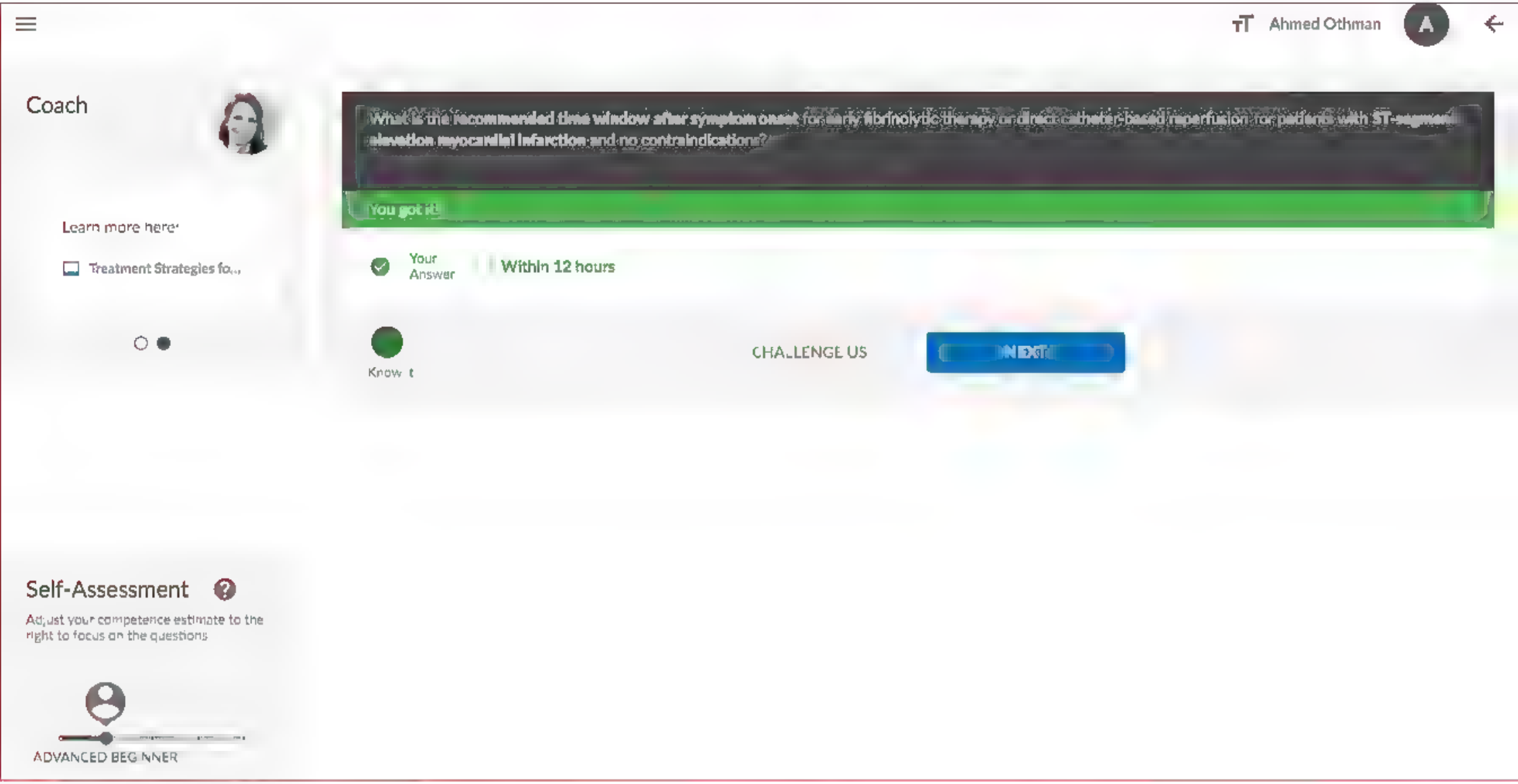
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What is the recommended time window after symptom onset for early fibrinolytic therapy and direct catheter-based reperfusion for patients with ST-segment elevation myocardial infarction and no contraindications?
You got it!
Learn more here:
Treatment Strategies fo...
Your Answer
Within 12 hours
Know it
CHALLENGE US
NEXT
Self-Assessment
Adjust your competence estimate to the right to focus on the questions
ADVANCED BEGINNER

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Autoplay On

Introduction

A 49 year old man says that he has had chest discomfort and excessive sweating for the past 25 minutes. The pain is not relieved with rest.

CHALLENGE US NEXT

Self-Assessment

Adjust your competence estimate to the right to focus on the questions

ADVANCED BEGINNER

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Autoplay

His initial vital signs are HR 120/min, BP 135/85 mm Hg, RR 22/min, SpO2 87% and temperature 37.8°C.

When considering oxygen saturation, what is your course of action?

CHOOSE THE CORRECT ANSWER

Intubate the patient immediately

Do not start oxygen

Administer albuterol nebulizer

Start oxygen at 4 L/min via nasal cannula

I KNOW IT

I'M NOT SURE

NO IDEA

Self-Assessment

Adjust your progress estimate to the right to focus on collections

ADVANCED BEGINNER

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Autoplay On

What additional questions help you determine next steps?

SELECT ALL THAT APPLY

- [x] When was the last time you went to the doctor?
- [x] When did the symptoms start?
- [x] Have you had recent falls?
- [x] Do you take any medication?
- [x] Do you have any allergies?

I KNOW IT | I KNOW | NO IDEA

Self Assessment

Adjust your competence estimate to the right to focus on the questions

ADVANCED BEGINNER

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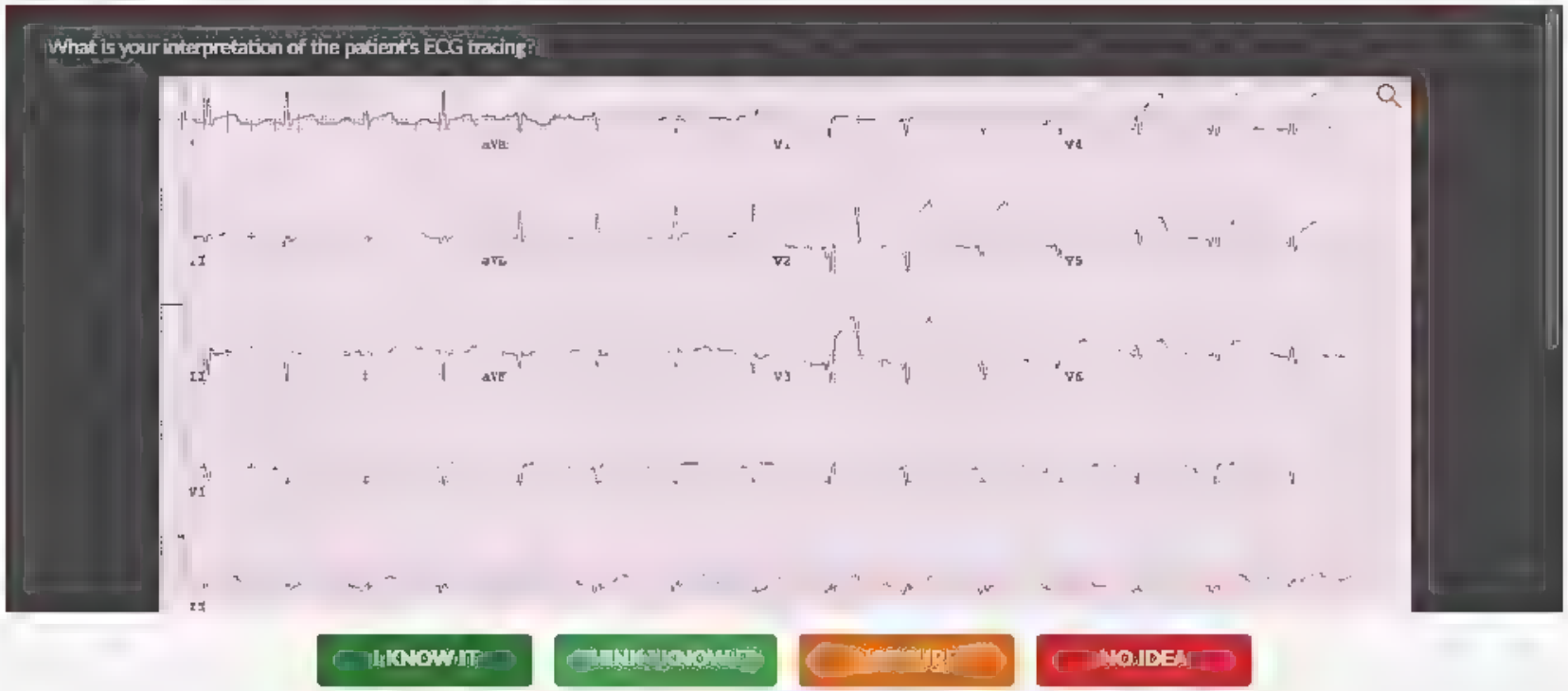
Self Assessment

Adjust your competence estimate to the right to focus on the questions



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Autoplay On

CHOOSE THE CORRECT ANSWER

Anterior ST-segment elevation myocardial infarction (STEM

Ventricular tachycardia

Posterior ST-segment elevation myocardial infarction (STEMI)

Normal sinus rhythm with premature ventricular contractions

I KNOW IT | I DON'T KNOW | NO IDEA

Self Assessment

Adjust your competence estimate to the right to focus on the questions

ADVANCED BEGINNER


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A
Coach
With the diagnosis of STEMI, what is the most probable treatment?
Push ▶ for reading content aloud
Autoplay On
CHOOSE THE CORRECT ANSWER
Admission to an intensive care unit
Release to home
Admission for observation
Admission for PCI or fibrinolysis
I KNOW IT
NO IDEA
Self-Assessment
ADVANCED BEGINNER

Ahmed Othman

Coach

Push ▶ for reading content aloud.

Autoplay On

After you give your report to the hospital staff, advise you to proceed to the cath lab for PCI.

What is the goal for PCI when treating this patient?

CHOOSE THE CORRECT ANSWER

Door-to-needle time of 90 minutes

First medical contact-to-needle time of 30 minutes

Door-to-balloon inflation time of 30 minutes

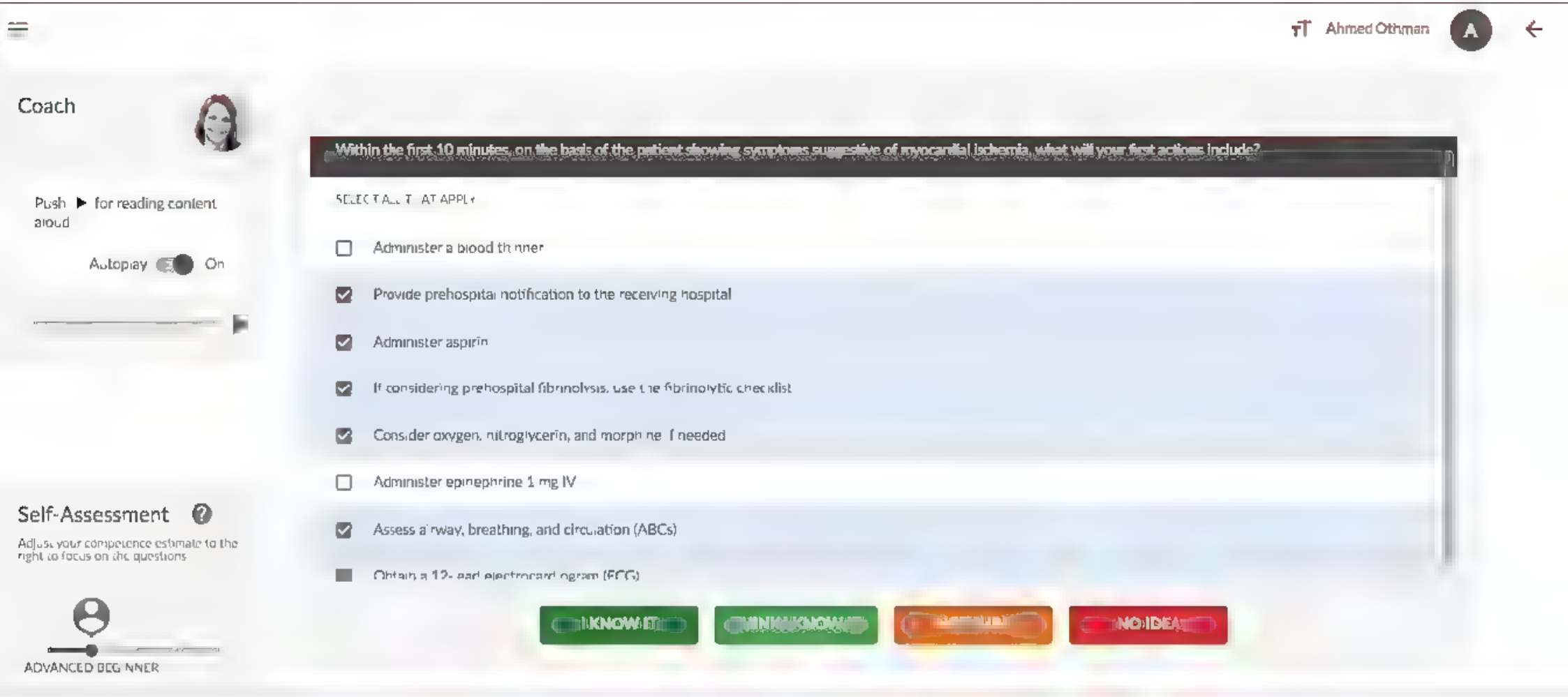
✓ First medical contact-to-balloon inflation time of 90 minutes

I KNOW IT | I DON'T KNOW | NO IDEA

Self-Assessment

Adjust your competence estimate to the right to focus on the questions

ADVANCED BEGINNER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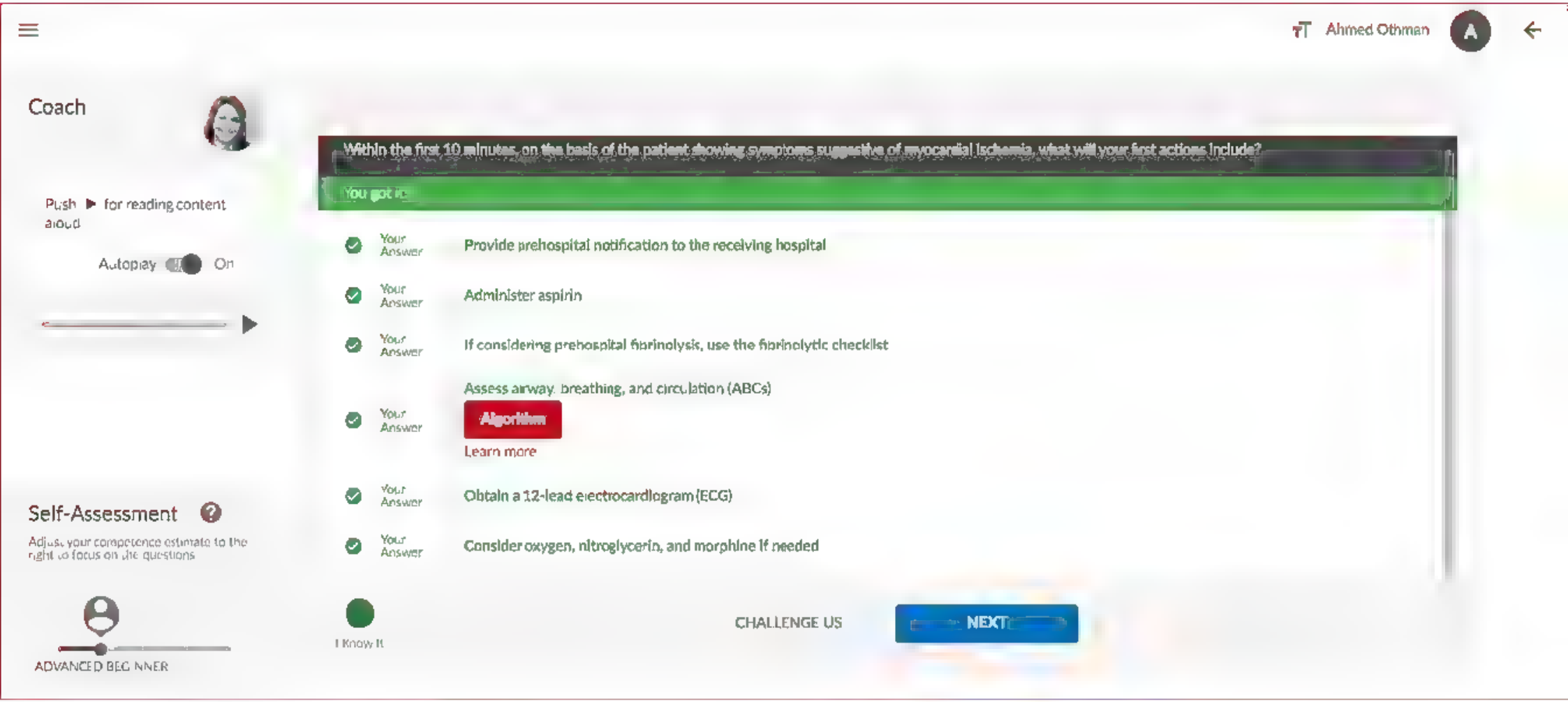
Autoplay On
Within the first 10 minutes, on the basis of the patient showing symptoms suggestive of myocardial ischemia, what will your first actions include?
SELECT ALL THAT APPLY
Administer a blood thinner
Provide prehospital notification to the receiving hospital
Administer aspirin
If considering prehospital fibrinolysis, use the fibrinolytic checklist
Consider oxygen, nitroglycerin, and morphine if needed
Administer epinephrine 1 mg IV
Assess airway, breathing, and circulation (ABCs)
Obtain a 12-lead electrocardiogram (ECG)
I KNOW IT
I THINK I KNOW IT
NO IDEA
Self-Assessment
Adjust your competence estimate to the right to focus on the questions
ADVANCED BEGINNER


Ahmed Othman
Coach
Push ▶ for reading content aloud
Autoplay On
Within the first 10 minutes, on the basis of the patient showing symptoms suggestive of myocardial ischemia, what will your first actions include?
You got it!
Your Answer
Provide prehospital notification to the receiving hospital
Your Answer
Administer aspirin
Your Answer
If considering prehospital fibrinolysis, use the fibrinolytic checklist
Your Answer
Assess airway, breathing, and circulation (ABCs)
Algorithm
Learn more
Your Answer
Obtain a 12-lead electrocardiogram (ECG)
Your Answer
Consider oxygen, nitroglycerin, and morphine if needed
Self-Assessment
Adjust your competence estimate to the right to focus on the questions
ADVANCED BEGINNER
I Know It
CHALLENGE US
NEXT

Ahmed Othman

Coach

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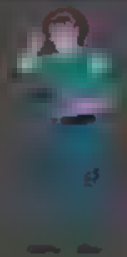
Autoplay On

His initial vital signs are HR 120/min, BP 135/88 mm Hg, RR 22/min, Spo2 97% and temperature 37.3°C.

When considering oxygen saturation, what is your course of action?



You got it.

Your Answer

Start oxygen at 4L/min via nasal cannula

Algorithm

Learn more

Self-Assessment

Adjust your competence estimate to the right to focus on the questions more.

ADVANCED BEGINNER

CHALLENGE US

NEXT

Ahmed Othman

Coach

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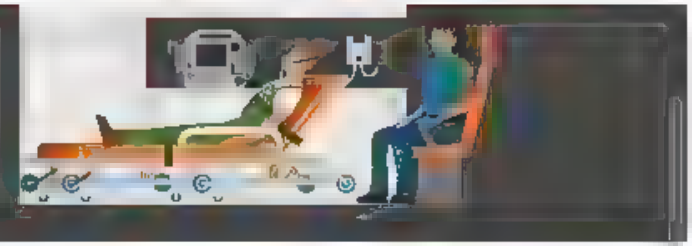
What additional questions help you determine next steps?



SELECT ALL THAT APPLY

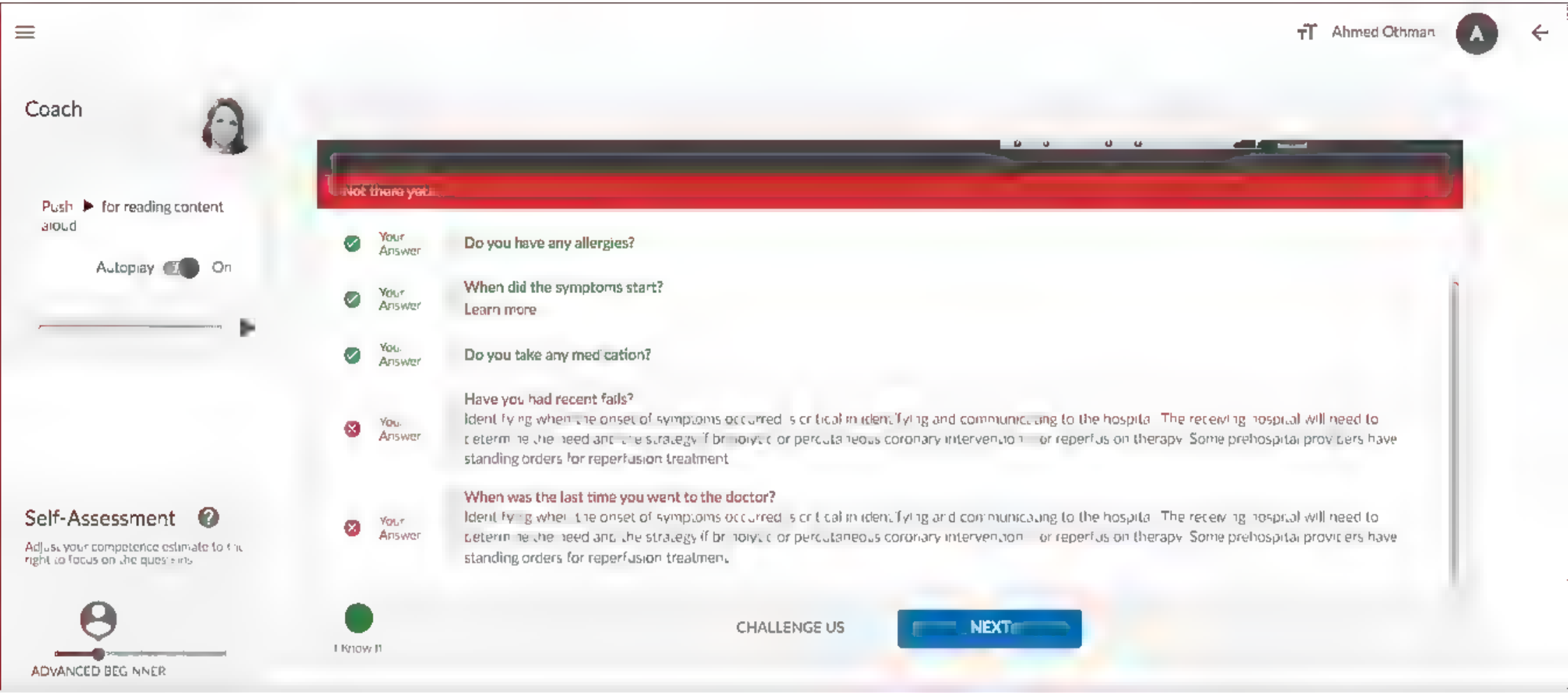
- [x] Have you had recent falls?
- [x] When was the last time you went to the doctor?
- [x] Do you have any allergies?
- [x] When did the symptoms start?
- [x] Do you take any medication?

I KNOW IT | I THINK I KNOW IT | NOT SURE | NO IDEA

Self-Assessment

Adjust your competence estimate to the right to focus on the questions

ADVANCED BEGINNER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Coach
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Autoplay On
Not there yet.
Your Answer
Do you have any allergies?
Your Answer
When did the symptoms start?
Learn more
You Answer
Do you take any medication?
You Answer
Have you had recent falls?
Identifying when the onset of symptoms occurred is critical in identifying and communicating to the hospital. The receiving hospital will need to determine the need and the strategy if thrombolytic or percutaneous coronary intervention or reperfusion therapy. Some prehospital providers have standing orders for reperfusion treatment
Your Answer
When was the last time you went to the doctor?
Identifying when the onset of symptoms occurred is critical in identifying and communicating to the hospital. The receiving hospital will need to determine the need and the strategy if thrombolytic or percutaneous coronary intervention or reperfusion therapy. Some prehospital providers have standing orders for reperfusion treatment.
Self-Assessment
Adjust your competence estimate to the right to focus on the questions
I Know It
CHALLENGE US
NEXT
ADVANCED BEGINNER

Ahmed Othman

Coach

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Autoplay On

What additional questions help you determine next steps?

Your Answer — Do you have any allergies?

Your Answer — When did the symptoms start?
Learn more

Your Answer — Do you take any medication?

Self-Assessment

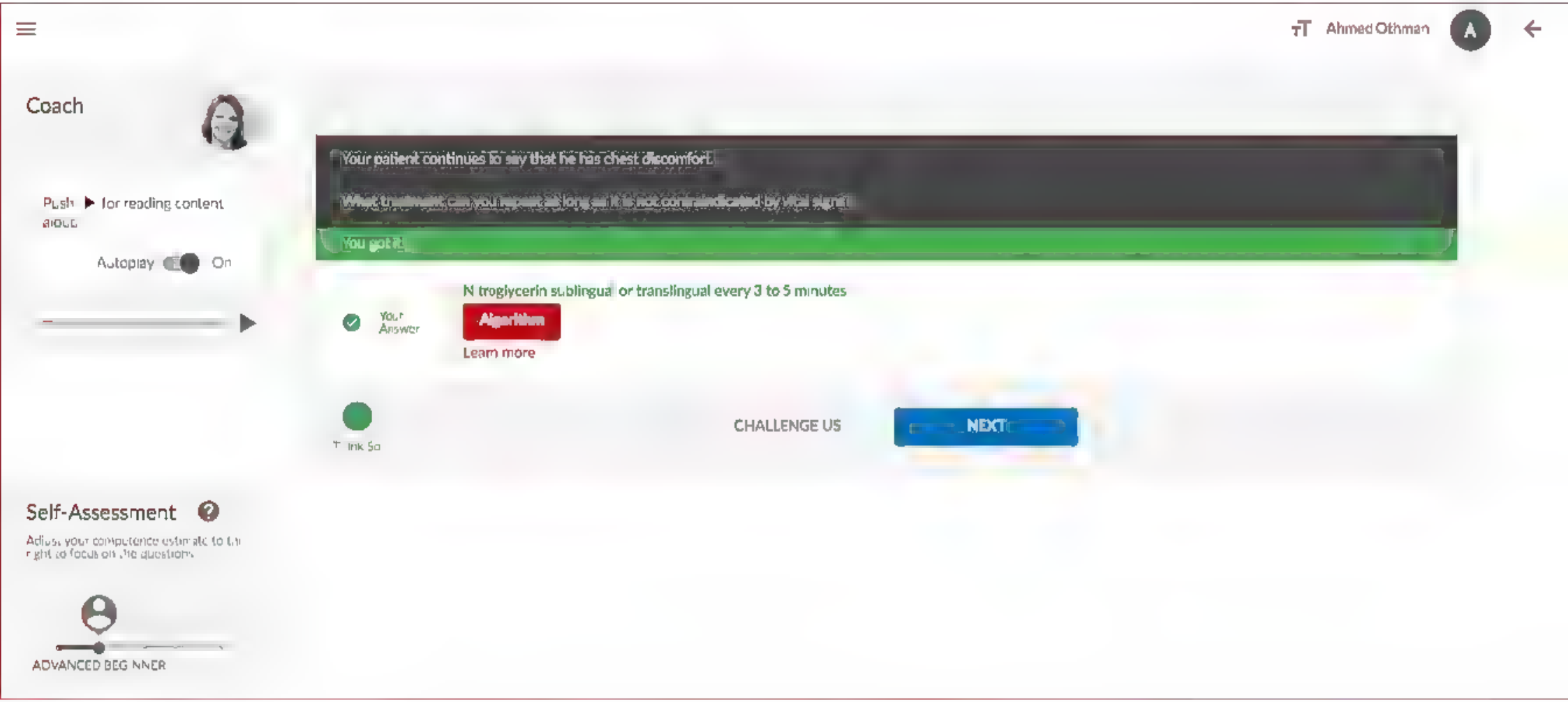
Adjust your competence estimate to the right to focus on the questions

ADVANCED BEGINNER

Think Sc

CHALLENGE JS

NEXT


Ahmed Othman
A
Coach
Your patient continues to say that he has chest discomfort.
You got it!
Push ▶ for reading content aloud
Autoplay On
Your Answer
N troglycerin sublingual or translingual every 3 to 5 minutes
Algorithm
Learn more
CHALLENGE US
NEXT
Self-Assessment
ADVANCED BEG NNER

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Coach

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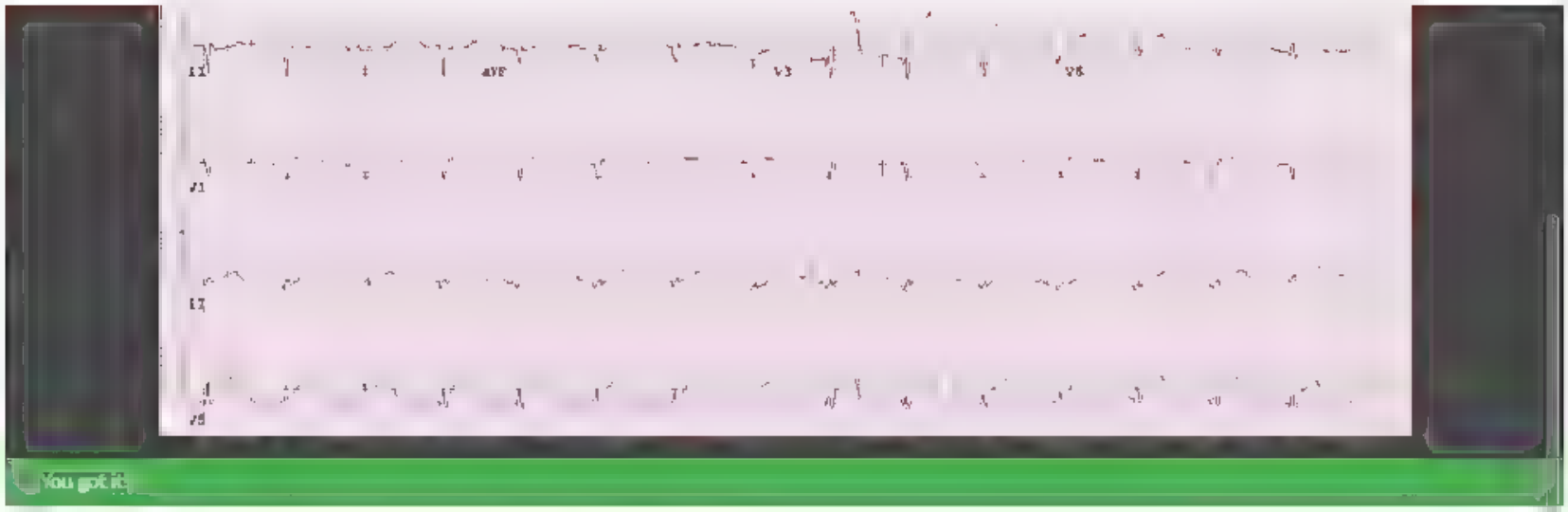


Self Assessment

Adjust your competence estimate to be right to focus on the questions

ADVANCED BEGINNER

Your Answer

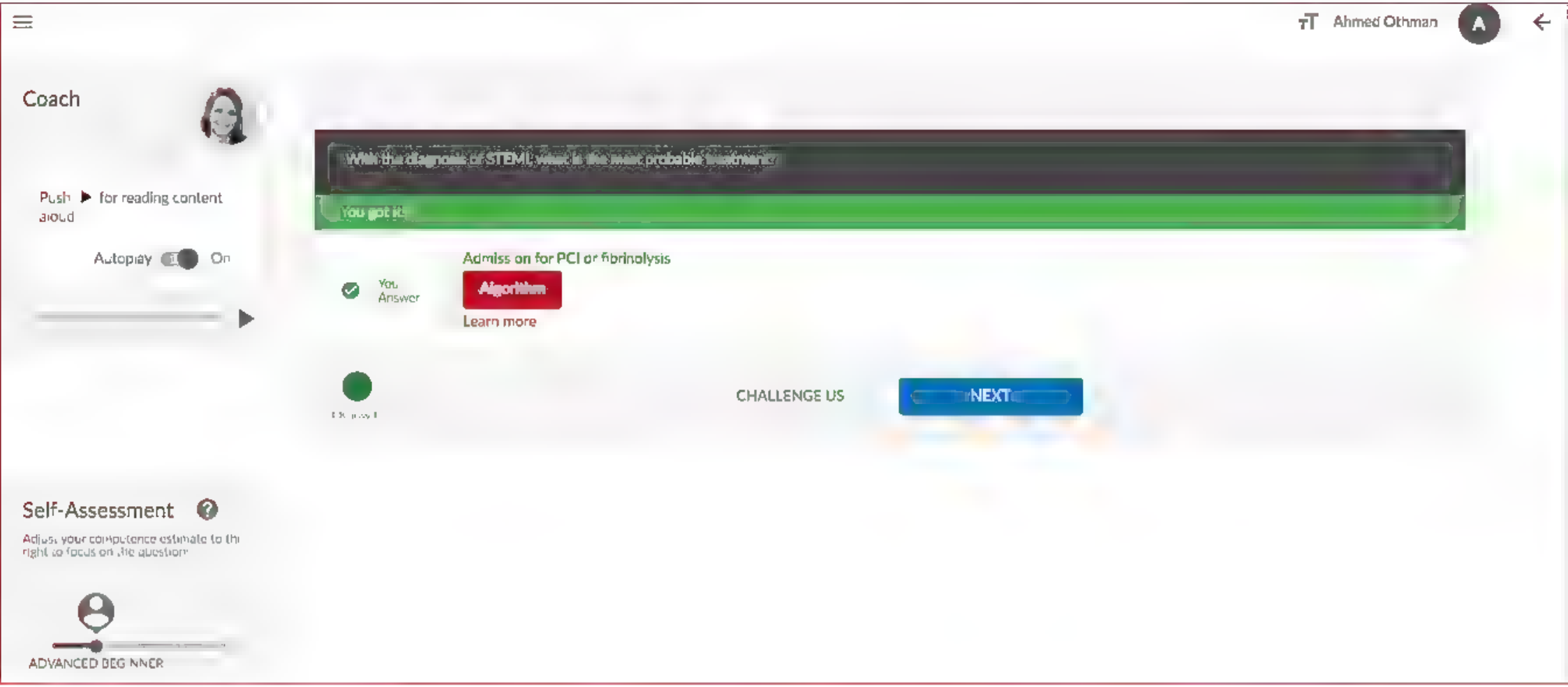
Anterior ST-segment elevation myocardial infarction (STEMI)

Learn more

I know !

CHALLENGE US

NEXT


Ahmed Othman
A
Coach
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Autoplay
On
You got it!
Admiss on for PCI or fibrinolysis
You Answer
Algorithm
Learn more
CHALLENGE US
NEXT
Self-Assessment
ADVANCED BEG NNER

Ahmed Othman

Coach

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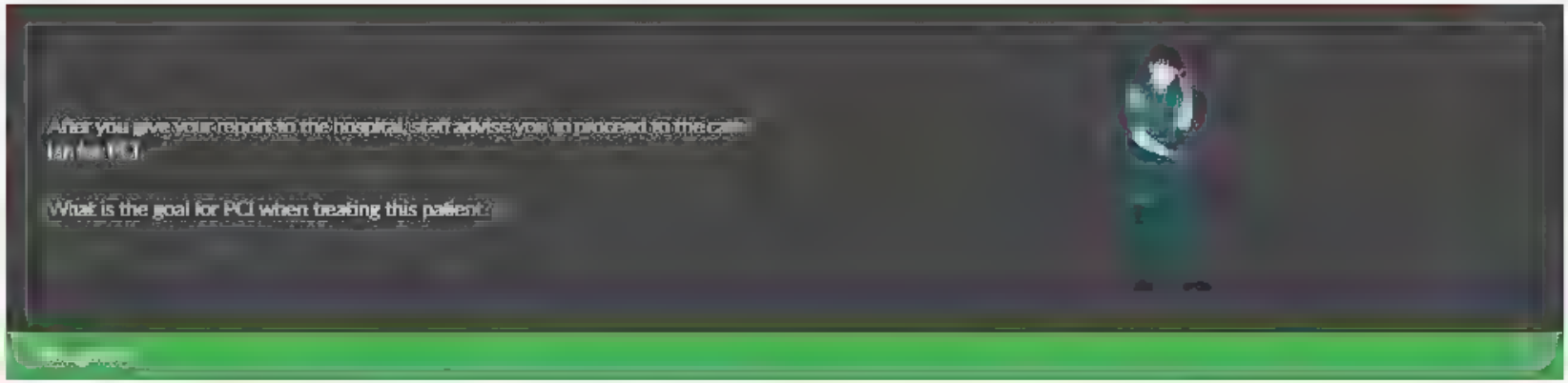


Your Answer

First medical contact-to-balloon inflation time of 90 minutes

Algorithm

Learn more

Self Assessment

Adjust your competence estimate to the right to focus on the questions

ADVANCED BEGINNER

I Know It

CHALLENGE US

NEXT

Coach

Push ▶ for reading content a oud

Autop ay On

Self-Assessment

Adjust your competence estimate to the right to focus on the questions

ADVANCED BEG NNER

STROKE INTRODUCTION

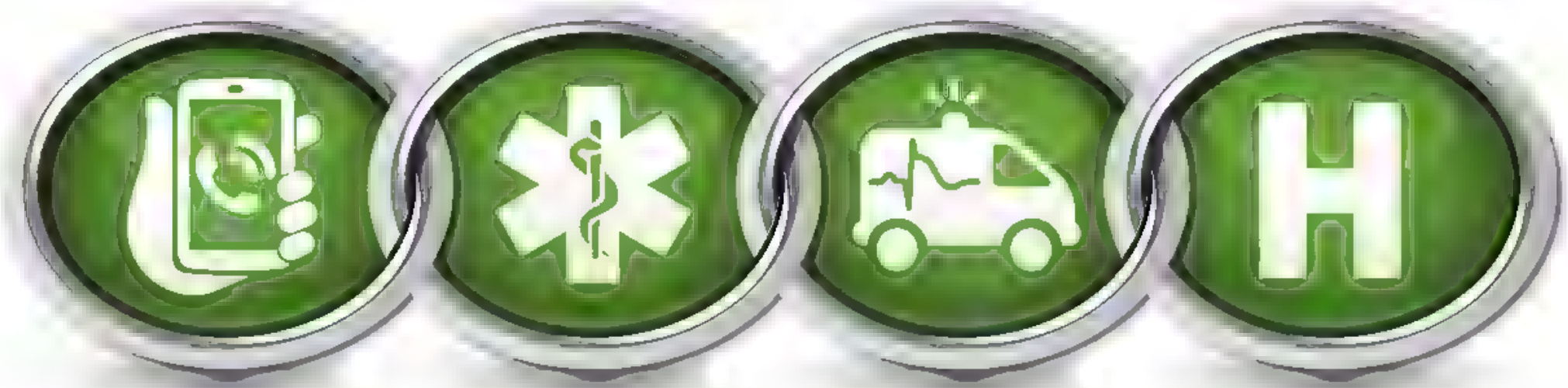
Stroke Chain of Survival

The goa of stroke care s to **minimize brain injury** and **maximize the patient s recovery** The **Stroke Chain of Surviva**, descr bed by the AHA and the American Stroke Association or ASA, inks the actions that patients, fam y members and hea thcare prov ders shou d take to maxim ze stroke recovery

- **Rapid recognition** of and **reaction** to stroke warn ng s gns and symptoms
- **Rapid use of 9-1-1** and **EMS** dispatch
- **Rapid EMS recognition** of stroke triage transport, and prehosp tal notification to the receiving hosp ta
- **Rapid diagnosis** and **treatment** n the hosp tal

1 2 3 NEXT

CHALLENGE US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Coach

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STROKE INTRODUCTION

The 8 D's of Stroke Care

The 8 D's of Stroke Care highlight the major steps in diagnosis and treatment of stroke and key points at which delays can occur

- **Detection**: rapid recognition of stroke signs and symptoms
- **Dispatch**: early activation and dispatch of EMS by phoning 9-1-1
- **Delivery**: rapid EMS stroke identification, management, triage, transport, and prehospital notification
- **Door**: emergent ED/imaging suite triage and immediate assessment by the stroke team
- **Data**: rapid clinical evaluation, laboratory testing, and brain imaging
- **Decision**: establishing stroke diagnosis and determining optimal therapy selection
- **Drug/Device**: administration of fibrinolytic and/or endovascular therapy if eligible
- **Disposition**: rapid admission to the stroke unit or critical care unit, or emergent interfacility transfer for endovascular therapy (or EVT)

Self-Assessment

Adjust your competence estimate to the right to focus on the questions

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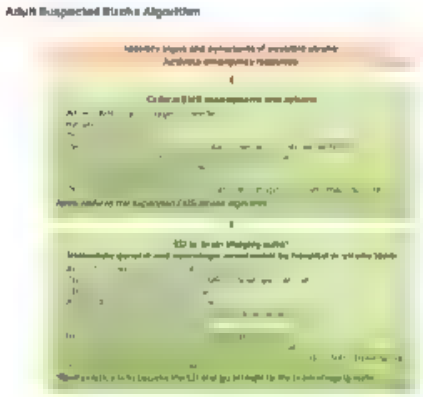
STROKE INTRODUCTION

Adult Suspected Stroke Algorithm

For more information on these critical elements see the **Adult Suspected Stroke Algorithm** below



PREVIOUS 1 2 3

I KNEW | GOT IT NOW | THINK I GOT IT | I DON'T GET IT

CHALLENGE US

Self-Assessment

Adjust your competence estimate to the right to focus on the questions

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MAJOR TYPES OF STROKE

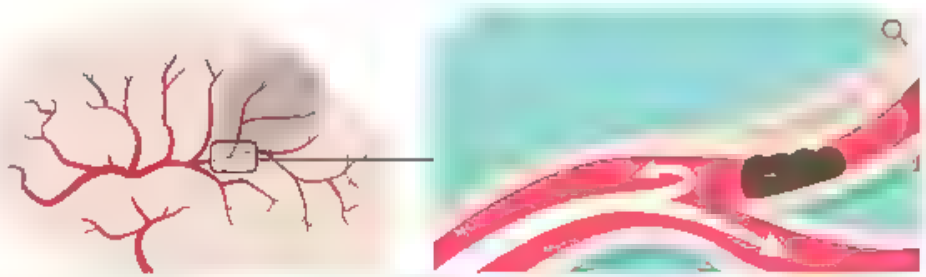
Stroke is a general term. It refers to an **acute neurologic impairment** that follows **interruption in blood supply** to a specific area of the brain. The **major types of stroke** are **hemorrhagic and ischemic**

Hemorrhagic Stroke

Hemorrhagic stroke accounts for **13% of all strokes** and occurs when a **blood vessel in the brain suddenly ruptures** into the surrounding tissue

Ischemic Stroke

Ischemic stroke accounts for **87% of all strokes** and is usually caused by an **occlusion of an artery** to a region of the brain.



Self-Assessment

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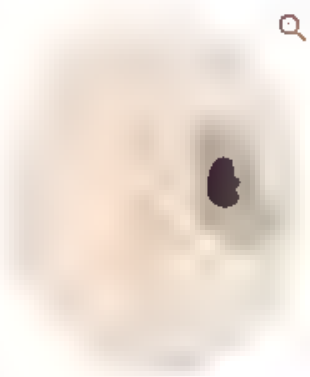
MAJOR TYPES OF STROKE

Area of infarction surrounding the immediate site and distal portion of brain tissue after an occlusion.



Area of ischemic penumbra (ischemic but not yet infarcted (dead) brain tissue) surrounding areas of infarction

Self-Assessment

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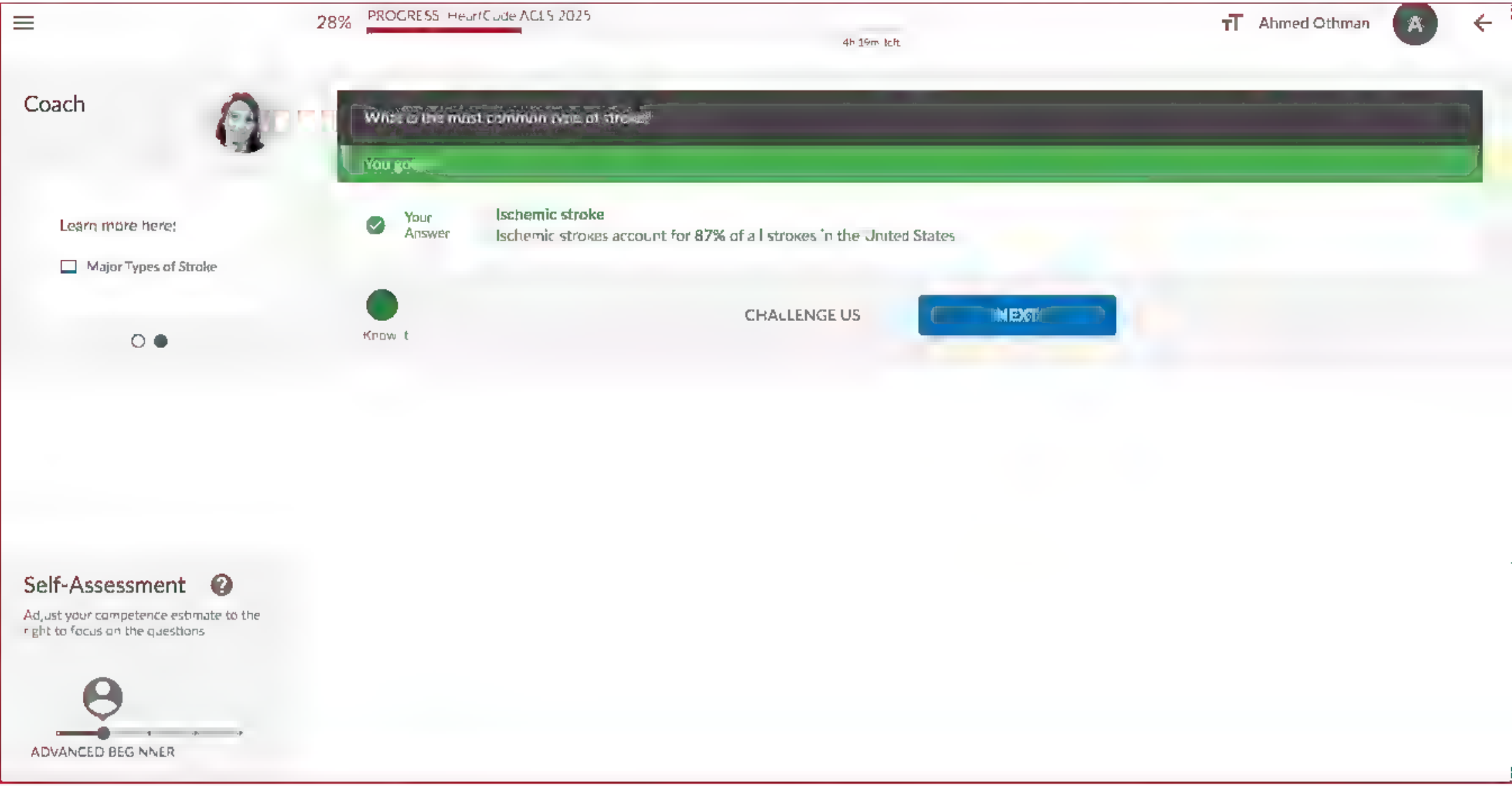
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Ahmed Othman
Coach
Learn more here:
Major Types of Stroke
Your Answer
Ischemic stroke
Ischemic strokes account for 87% of a l strokes 'n the Jnited States
CHALLENGE US
NEXT
Self-Assessment
Ad,ust your competence estmate to the r ght to focus on the questions
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What type of stroke occurs when a blood vessel in the brain suddenly ruptures into the surrounding tissue?

You got it

Your Answer: Hemorrhagic stroke

Learn more here:

Major Types of Stroke

Know it

CHALLENGE US

NEXT

Self-Assessment

Adjust your competence estimate to the right to focus on the questions

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WARNING SIGNS AND SYMPTOMS OF ISCHEMIC STROKE

Signs and Symptoms

The s gns and symptoms of a stroke may be **subtle**. They include

- Sudden **weakness** or **numbness** of the face, **arm** or **leg**, especially on one side of the body
- **Trouble speaking** or **understanding**
- Sudden **trouble seeing** in one or both eyes
- Sudden **trouble walking**
- **Dizziness** or **loss of balance** or **coordination**
- Sudden **severe headache** with no known cause
- Sudden **confusion**

Self-Assessment

Ad ust your competence estimate to the right to focus on the questions

ADVANCED BEG NNER

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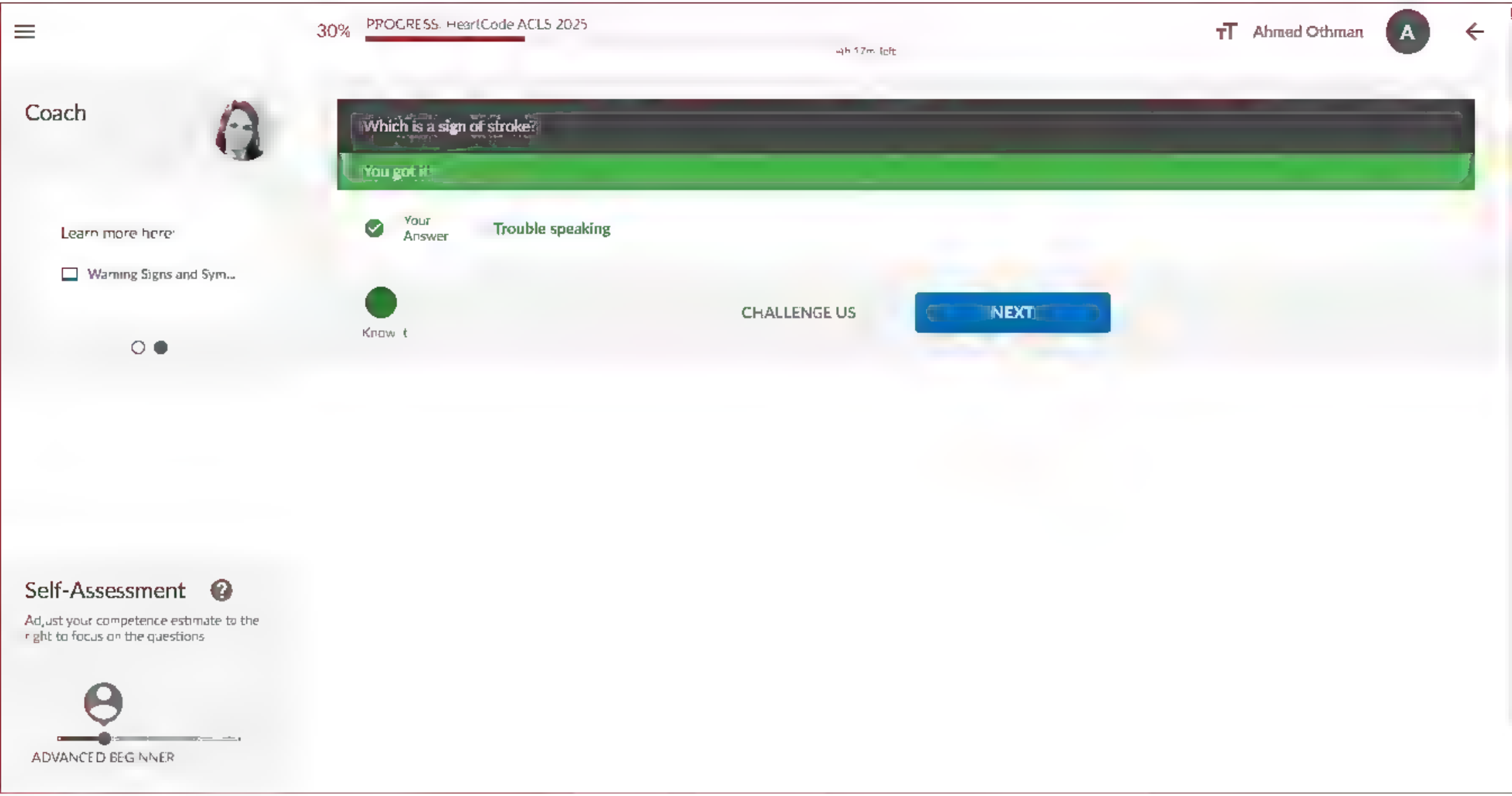
CHALLENGE US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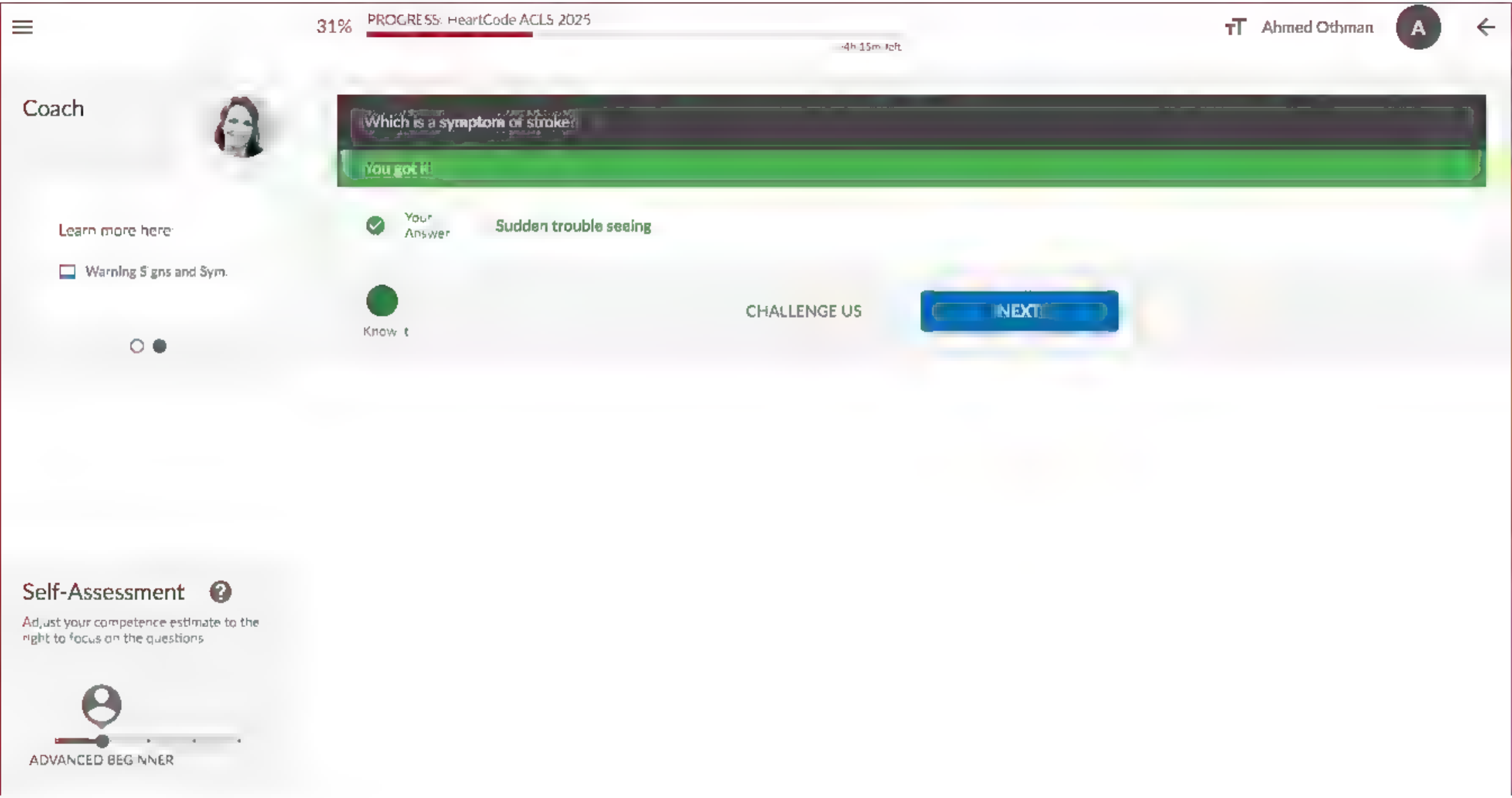
Coach
Which is a sign of stroke?
You got it!
Your Answer
Trouble speaking
Learn more here:
Warning Signs and Sym...
CHALLENGE US
NEXT
Self-Assessment
Adjust your competence estimate to the right to focus on the questions
ADVANCED BEGINNER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Coach
Which is a symptom of stroke?
You got it!
Your Answer
Sudden trouble seeing
Learn more here:
Warning Signs and Sym.
Know it
CHALLENGE US
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Self-Assessment
Adjust your competence estimate to the right to focus on the questions
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STROKE ASSESSMENT TOOLS FOR EMS

The AHA recommends that all EMS personnel be trained to recognize stroke by using a validated, abbreviated out-of-hospital neurologic evaluation tool such as the **Cincinnati Prehospital Stroke Scale** (CPSS) or the **Los Angeles Prehospital Stroke Screen**.

The **CPSS** identifies stroke on the basis of **3 physical findings**

- **Facial droop** (have the patient smile or try to show teeth)
- **Arm drift** (have the patient close eyes and hold both arms out, with palms up)
- **Abnormal speech** (have the patient say, "You can't teach an old dog new tricks")

By using the CPSS, medical personnel **can evaluate the patient in less than 1 minute**. The **presence of 1 finding on the CPSS has an estimated probability of 72%** when scored by prehospital providers.

You can see a table of **normal and abnormal findings in the CPSS** by **clicking** on the **CPSS button** below

CPSS

KNEW DON'T GET IT

CHALLENGE US

Self-Assessment

Adjust your competence estimate to the right to focus on the questions

ADVANCED BEGINNER

Test	Findings
Facial droop: have the patient show teeth or smile	**Normal**—both sides of the face move equally **Abnormal**—one side of the face does not move as well as the other side
Arm drift: patient closes eyes and extends both arms straight out, with palms up, for 10 seconds	**Normal**—both arms move the same or both arms do not move at all (other findings, such as pronator drift, may be helpful) **Abnormal**—one arm does not move or one arm drifts down compared with the other
Abnormal speech: have the patient say, "you can't teach an old dog new tricks"	**Normal**—patient uses correct words with no slurring **Abnormal**—patient slurs words, uses the wrong words, or is unable to speak
Interpretation: if any 1 of these 3 signs is abnormal the probability of a stroke is 72%	

Modified from Kothari RU, Pancioli A, Liu T, Brott T, Broderick J. Cincinnati Prehospital Stroke Scale: reproducibility and validity. Ann Emerg Med. 1999;33(4):373-378. With permission from Elsevier.

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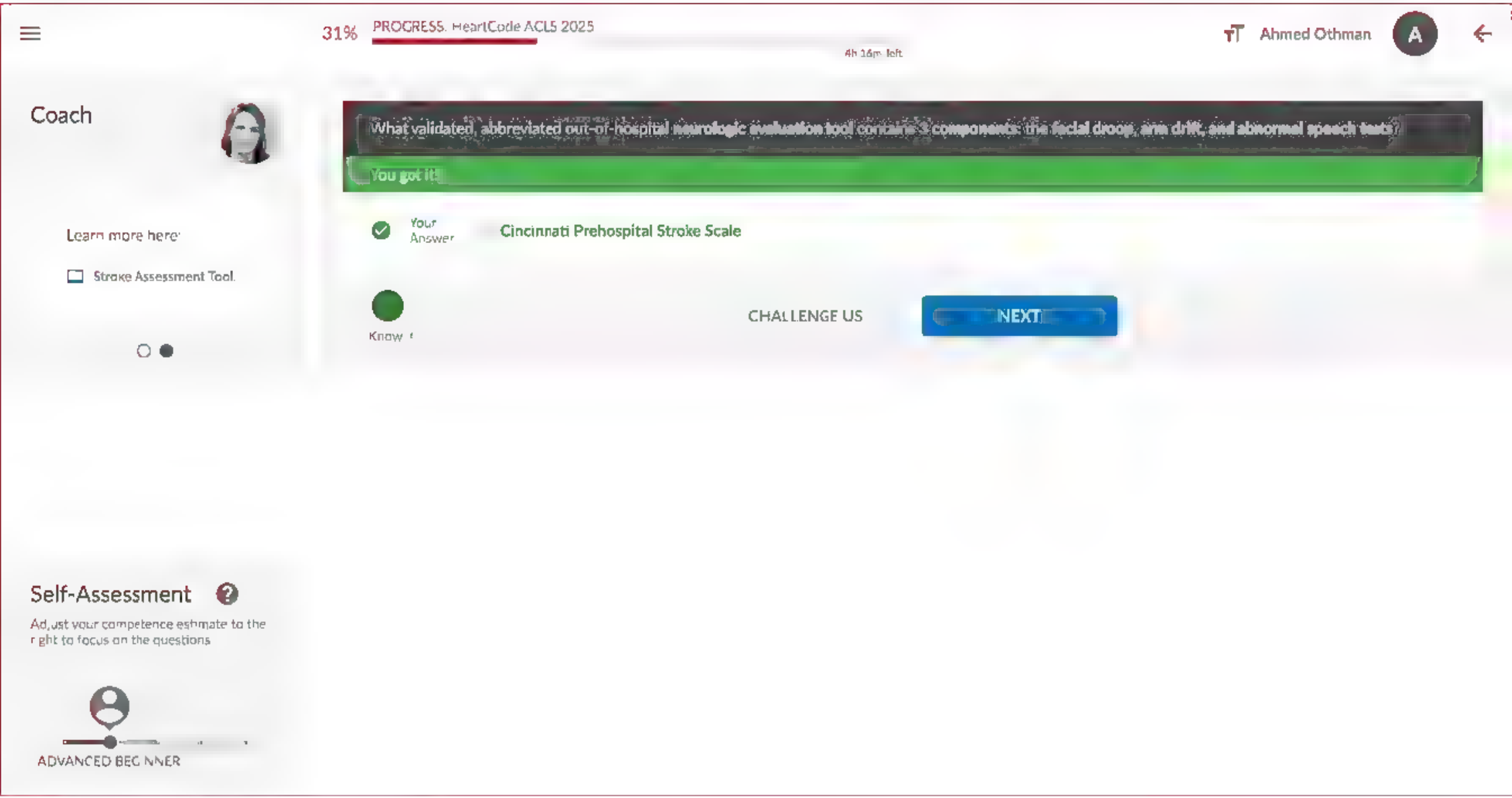
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What validated, abbreviated out-of-hospital neurologic evaluation tool contains 3 components: the facial droop, arm drift, and abnormal speech tests?
You got it!
Your Answer
Cincinnati Prehospital Stroke Scale
Learn more here:
Stroke Assessment Tool
CHALLENGE US
NEXT
Know
Self-Assessment
Adjust your competence estimate to the right to focus on the questions
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What is the estimated probability of the Cincinnati Prehospital Stroke Scale with 1 abnormal finding when scored by prehospital providers?

You got it!

Your Answer 72%

Learn more here:

Stroke Assessment Tool.

Know it

CHALLENGE US

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Self-Assessment

Adjust your competence estimate to the right to focus on the questions

ADVANCED BEGINNER

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CRITICAL EMS ASSESSMENTS AND ACTIONS

To help identify wh ch hosp tal is most appropr ate for the stroke patient EMS should also perform a severity screen to determine if there is a large-vessel occlusion (LVO). As always, EMS shou d follow local stroke protocols.

After Recognizing the Stroke

- **Assess ABCs**; give oxygen if needed
- **Initiate stroke protocol**
- **Perform physical exam**
- Perform val dated **prehospital stroke screen** and **severity tool**
- **Estab ish time** of symptom onset (last known normal
- **Triage** to most appropriate stroke center
- **Check glucose** treat if indicated
- **Provide prehosptial notification on arrival**, transport to brain Imaging su te

1 2 3 NEXT

Self-Assessment

Ad ust your competence estimate to the right to focus on the questions

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CRITICAL EMS ASSESSMENTS AND ACTIONS

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After Recognizing the Stroke

- **Assess ABCs**, give oxygen if needed
- **Initiate stroke protocol**
- **Perform physical exam**
- Perform validated **prehospital stroke screen** and **severity tool**
- **Establish time** of symptom onset (last known normal)
- **Triage** to most appropriate stroke center
- **Check glucose**; treat if indicated
- **Provide prehosptial notification on arrival**, transport to brain imaging suite

Both out-of-hospital and in-hospital medical personnel should **provide supplemental oxygen to hypoxemic stroke patients** (those whose **oxygen saturation is 94% or less**) or patients for whom **oxygen saturation is unknown**.

Self-Assessment

Ad ust your competence estimate to the right to focus on the questions

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CRITICAL EMS ASSESSMENTS AND ACTIONS

Examples of stroke assessment tools

- Cincinnati Prehospital Stroke Scale (CPSS/FAST)
- Los Angeles Prehospital Stroke Screen (LAPSS)
- Melbourne Ambulance Stroke Screen (MASS)
- Miami Emergency Neurologic Deficit Score (MENDS)
- Recognition of Stroke in the Emergency Room Score (ROSIER)

Stroke severity scores

- National Institutes of Health Stroke Scale (NIHSS)
- Shortened National Institutes of Health Stroke Scale 5 and 8 (sNIHSS 5 and sNIHSS 8)
- Cincinnati Prehospital Stroke Severity Screen (CPSSS)
- Field Assessment Stroke Triage for Emergency Destination (FAST-ED)
- Los Angeles Motor Scale (LAMS)

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Self-Assessment

Adjust your competence estimate to the right to focus on the questions

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CRITICAL EMS ASSESSMENTS AND ACTIONS

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- Miami Emergency Neurologic Deficit Score (MENDS)
- Recognition of Stroke in the Emergency Room Score (ROSIER)

Stroke severity scores

- National Institutes of Health Stroke Scale (NIHSS)
- Shortened National Institutes of Health Stroke Scale 5 and 8 (sNIHSS-5 and sNIHSS-8)
- Cincinnati Prehospital Stroke Severity Screen (CPSSS)
- Field Assessment Stroke Triage for Emergency Destination (FAST-ED)
- Los Angeles Motor Scale (LAMS)
- Rapid Arterial Occlusion Evaluation score (RACE)
- 3-Item Stroke Scale (3ISS)

Self-Assessment

Adjust your competence estimate to the right to focus on the questions

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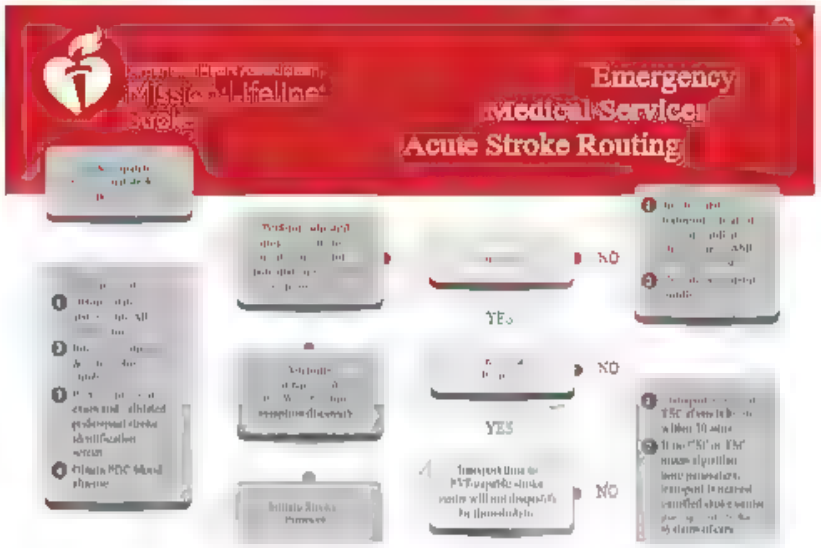
CRITICAL EMS ASSESSMENTS AND ACTIONS

Emergency Medical Services Acute Stroke Routing



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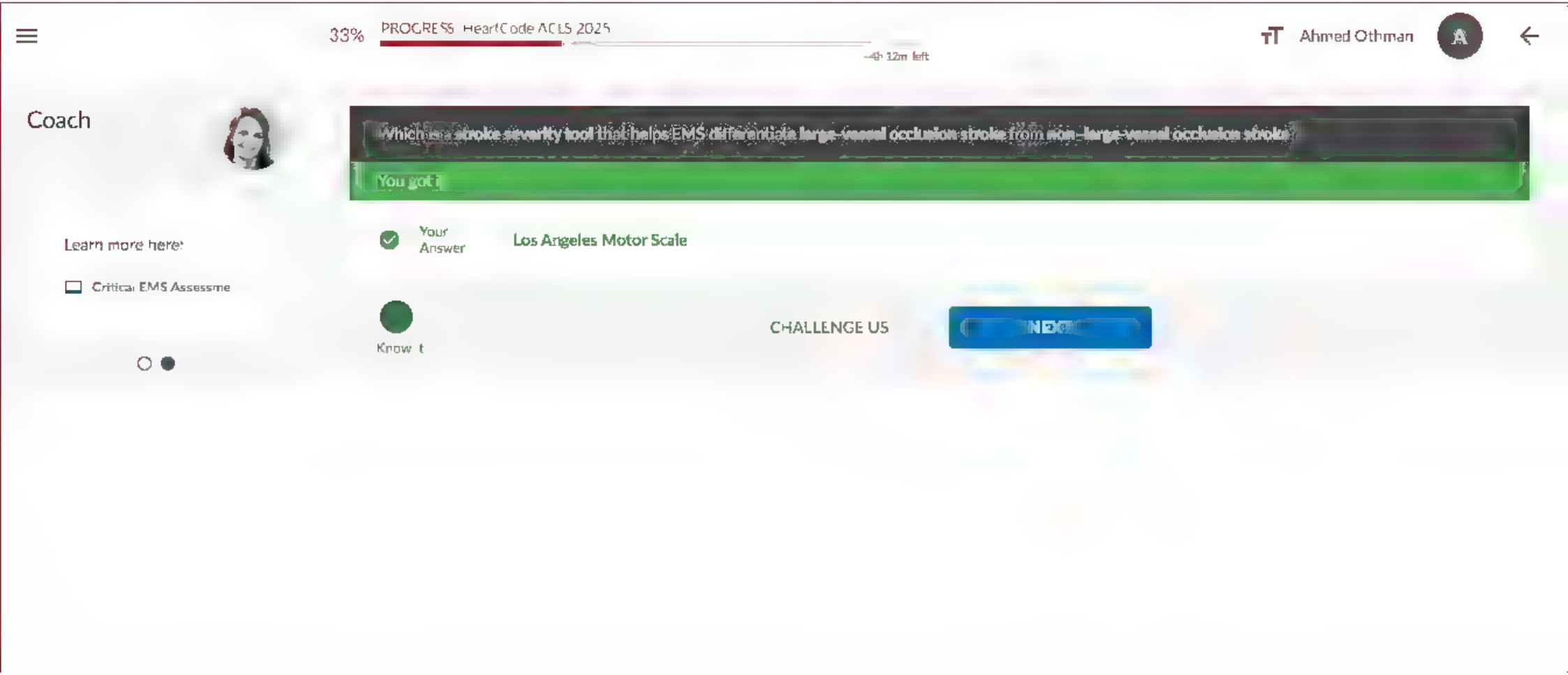
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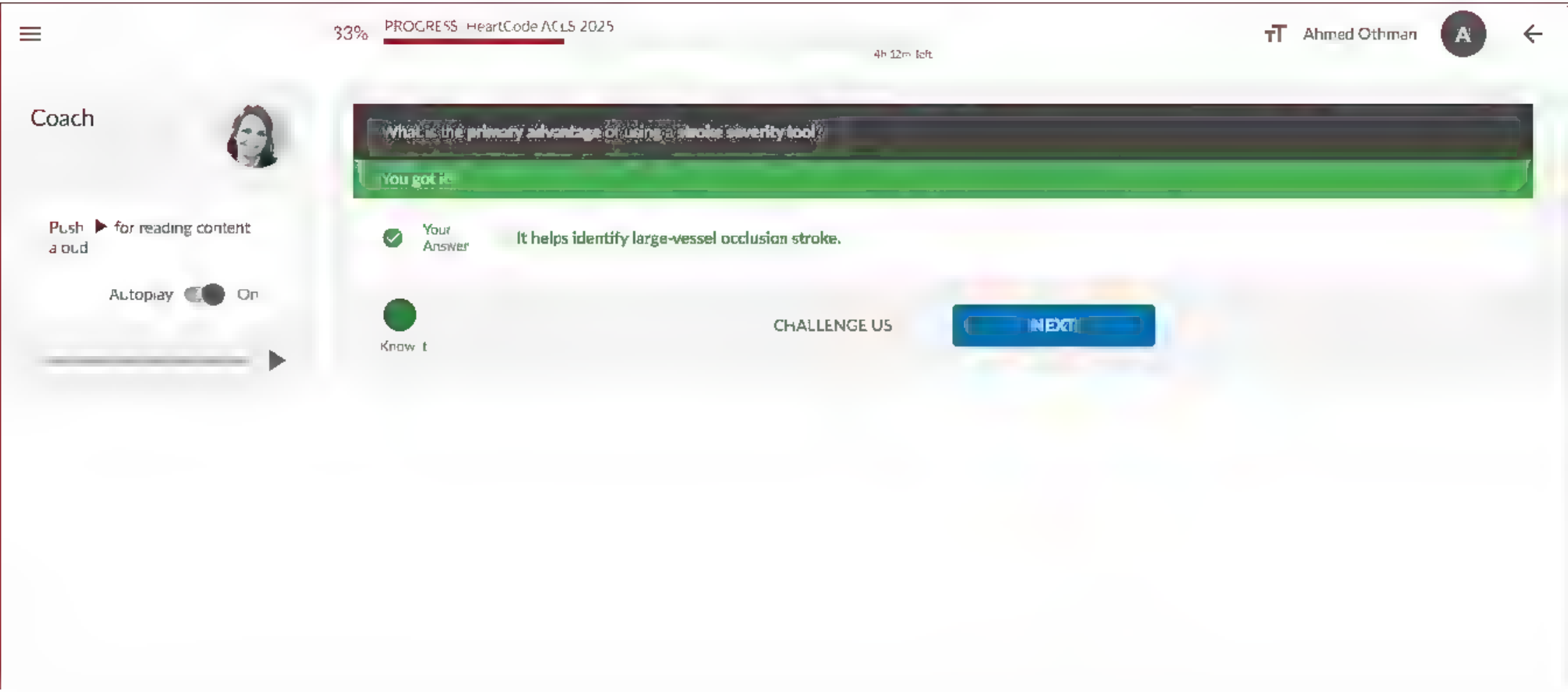
Which is a stroke severity tool that helps EMS differentiate large-vessel occlusion stroke from non-large-vessel occlusion stroke?
You got it
Learn more here:
Critical EMS Assessme
Your Answer
Los Angeles Motor Scale
Know it
CHALLENGE US
NEXT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What is the primary advantage of using a stroke severity tool?
You got it!
Your Answer
It helps identify large-vessel occlusion stroke.
Know it
CHALLENGE US
NEXT

Coach

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STROKE CENTERS AND STROKE UNITS

Evidence indicates a benefit from triage of stroke patients directly to designated certified stroke centers. Currently, **4 levels of stroke certification exist** and certification is given on the basis of a hospital's specific capabilities.

Acute Stroke Ready Hospital

Acute Stroke Ready Hospitals typically **serve rural and under-resourced areas**. Emergent identification and treatment of patients with alteplase, when indicated, is typically facilitated by telemedicine to provide access to acute neurologic expertise. Typically **patients are later transferred for admission to a stroke unit or for a higher level of care** as indicated.

Primary Stroke Center

The Primary Stroke Center is the **cornerstone of stroke systems of care**. These centers comprise a wide range of hospitals **able to quickly identify stroke patients, provide alteplase therapy** if indicated, and **admit patients to a dedicated stroke unit**. Roughly half of all stroke patients in the United States receive care in a Primary Stroke Center.

Self-Assessment

Adjust your competence estimate to the right to focus on the questions

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STROKE CENTERS AND STROKE UNITS

The Primary Stroke Center is the cornerstone of stroke systems of care. These centers comprise a wide range of hospitals able to quickly identify stroke patients, provide alteplase therapy if indicated, and admit patients to a dedicated stroke unit. Roughly half of all stroke patients in the United States receive care in a Primary Stroke Center.

Thrombectomy-Capable Stroke Center

The Thrombectomy-Capable Stroke Center certification was jointly created by the AHA and the Joint Commission to recognize stroke centers that meet the same **high-quality standards as a primary stroke center** but are also **capable of providing endovascular therapies** for patients with LVO. The Thrombectomy-Capable Stroke Center designation was created to recognize these EVT-capable facilities in areas where a Comprehensive Stroke Center was not available.

Comprehensive Stroke Center

Hospitals achieving Comprehensive Stroke Center certification are **capable of managing all forms and severities of stroke**, both ischemic and hemorrhagic, and can **provide 24/7 access to specialty care**, such as neurosurgery, endovascular therapy, and neurocritical care. A Comprehensive Stroke Center typically **serves as the hub of a regional stroke system of care**, providing receiving capabilities for transferred patients and providing feedback and education for transferring sites.

Self-Assessment

Adjust your competence estimate to the right to focus on the questions

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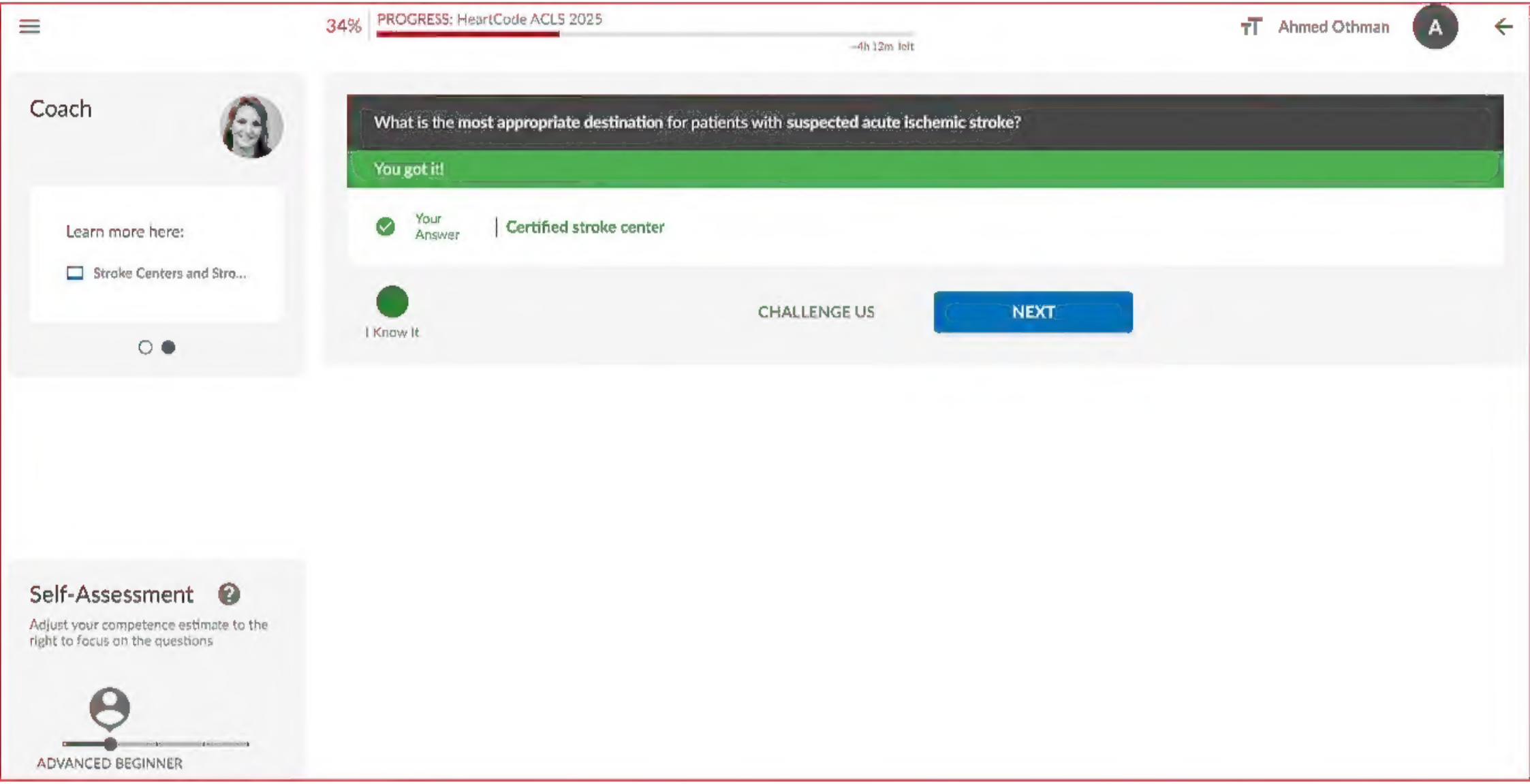
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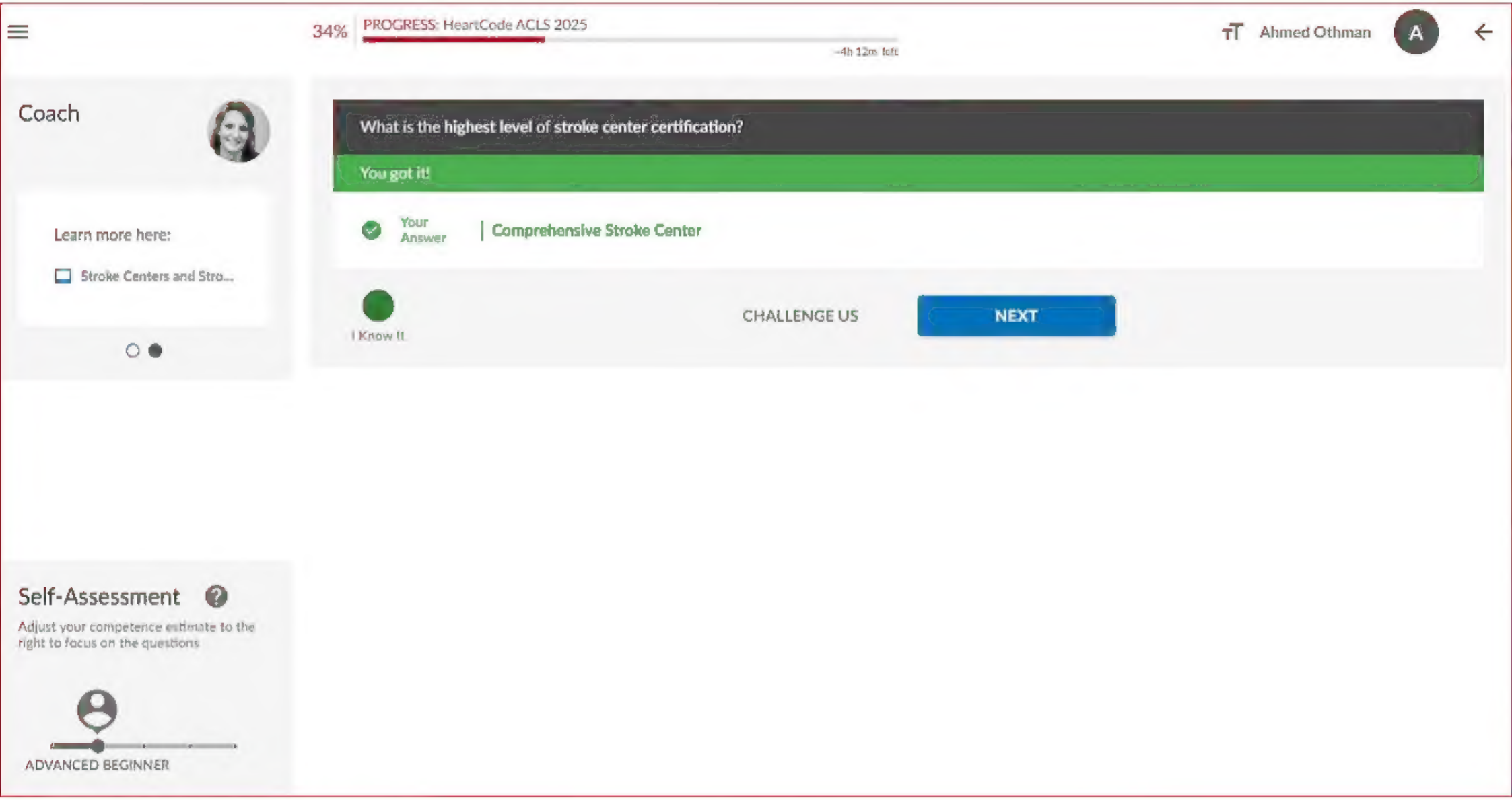
Learn more here:
Stroke Centers and Stro...
What is the most appropriate destination for patients with suspected acute ischemic stroke?
You got it!
Your Answer
Certified stroke center
I Know It
CHALLENGE US
NEXT
Self-Assessment
Adjust your competence estimate to the right to focus on the questions
ADVANCED BEGINNER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Learn more here:
Stroke Centers and Stro...
What is the highest level of stroke center certification?
You got it!
Your Answer
Comprehensive Stroke Center
I Know It
CHALLENGE US
NEXT
Self-Assessment
Adjust your competence estimate to the right to focus on the questions
ADVANCED BEGINNER

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EMS TRANSPORT AND ALERTING THE RECEIVING FACILITY

Advantages of EMS Transport

- Emergency medical dispatchers play a critical role in timely treatment of potential stroke by
  - **Identifying** possible stroke patients
  - Providing **high-priority dispatch**
  - **Instructing bystanders** in lifesaving CPR skills or other supportive care if needed while EMS providers are on the way
- Responding providers can **assess ABCs** and **give oxygen as needed.**
- EMS personnel can initiate **stroke protocol**, **perform a physical exam**, **establish time of symptom onset (last known normal)**, **and check glucose and treat if indicated.**
- EMS can **triage to the most appropriate stroke center** on the basis of a validated prehospital stroke screen, stroke severity tool, and on patient characteristics following regional destination protocols.
- EMS can **provide prehospital notification**, enabling the hospital to prepare to evaluate and manage the patient more efficiently, and on arrival transport to the brain imaging suite.

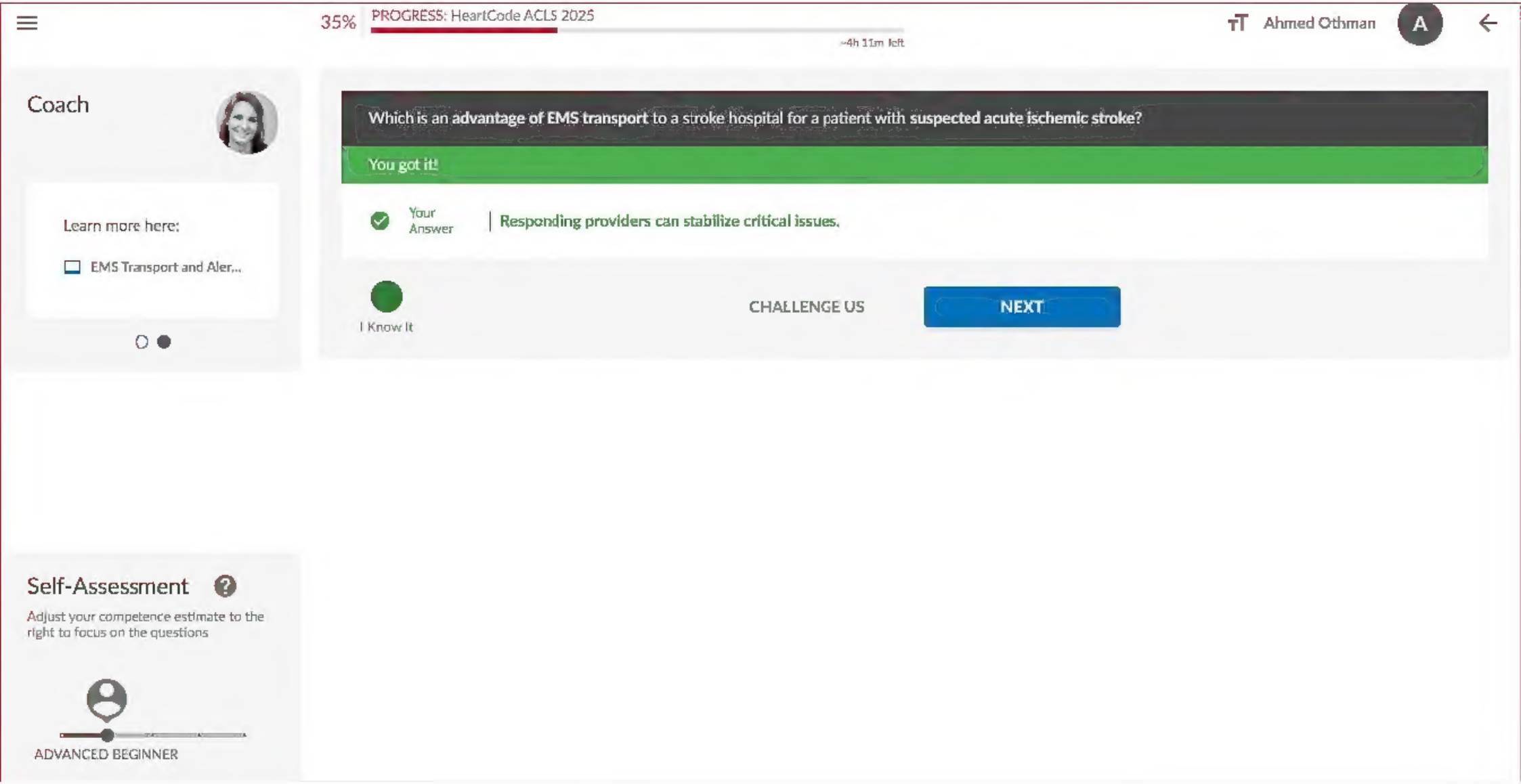
Self-Assessment

Adjust your competence estimate to the right to focus on the questions

ADVANCED BEGINNER

I KNEW | GOT IT NOW | THINK I GOT IT | I DON'T GET IT

CHALLENGE US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Coach
Learn more here:
EMS Transport and Aler...
Which is an advantage of EMS transport to a stroke hospital for a patient with suspected acute ischemic stroke?
You got it!
Your Answer
Responding providers can stabilize critical issues.
I Know It
CHALLENGE US
NEXT
Self-Assessment
Adjust your competence estimate to the right to focus on the questions
ADVANCED BEGINNER